PB82-158015

Reno-Sparks Joint Water Pollution Control Plant Cross-Town Sewer and Lawton-Verdi Interceptor Extension: Draft Environmental Impact Statement

Reno, NV

Prepared for

Environmental Protection Agency
San Francisco, CA

Jan 77

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The purpose of this EIS/EA is to: identify, analyze and assess the environmental benefits and impacts of alternatives to wastewater collection, transport, treatment, reclamation/reuse, and disposal systems for the project area, and to publicly present all issues surrounding the project's objectives including the primary and secondary benefits and impacts so that they may be considered and resolved as openly and satisfactorily as possible

The project is located in a semiarid portion of the Truckee River Basin. The Major public concerns with respect to water related issues focus on water quality, water quantity and ultimate effluent disposition for the area.

and includes Reno and Sparks, Nevada

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Sewerage
Regional Planning
Nevada
Treatment Facilities
Interceptor Sewers
Wastewater Treatment

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Secondary Effects
Reno, Nevada
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Truckee River
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Environmental Impact Statement
Pyramid Lake

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19. Security Class (This Report)

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EPA-9-NV-WASHOE-RENO/
SPARKS-WWTP/INT-79

PB82-158015

DRAFT
ENVIRONMENTAL IMPACT STATEMENT

RENO-SPARKS JOINT WATER POLLUTION CONTROL PLANT CROSS-TOWN SEWER & LAWTON-VERDI INTERCEPTOR EXTENSION

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U.S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA 22161

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

C-32-0114-010

DRAFT
ENVIRONMENTAL IMPACT STATEMENT & ENVIRONMENTAL IMPACT ASSESSMENT
FOR
reno-sparks joint water pollution control plant, cross-town sewer and lawton-verdi interceptor extension

january 1977

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
100 CALIFORNIA STREET
SAN FRANCISCO, CALIFORNIA 94111

JAN 20 1977

To All Interested Agencies, Public Groups and Concerned Individuals:

The Draft Environmental Impact Statement/Environmental Assessment for the Reno-Sparks Joint Water Pollution Control Plant, Cross-Town Sewer and Lawton-Verdi Interceptor Extension is submitted for your review and comment. This statement has been prepared in compliance with the National Environmental Policy Act of 1969 (P.L. 91-190), and implementing regulations promulgated by the Council on Environmental Quality and the Environmental Protection Agency.

Comments should be sent to this office within forty-five (45) days of the date of this letter. All comments received will be considered in the preparation of the Final Environmental Impact Statement for this action.

In order to receive public comment, the Environmental Protection Agency, Region IX, and the City of Reno, Nevada will hold public hearings on the Draft EIS during February 1977. The times and places for these hearings will be provided at a later date.

All interested parties are invited to express their views at the hearings. Persons wishing to make comments may submit same in writing and/or appear at the hearings. Oral statements will be considered, but, for the accuracy of the record, all important testimony should be submitted in triplicate to:

Environmental Protection Agency
Attention: Hearings Office
Region IX
100 California Street
San Francisco, CA 94111

Enough copies of written material should be provided so that the other interested parties at the hearing may receive a copy. Oral statements should summarize extensive written materials so that there will be time for all interested persons to be heard.

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The Draft EIS and supplemental information, including addenda and the facilities plan may be reviewed at:

RENO AREA

Reno City Hall
Public Works Department
S. Center & E. Liberty
Reno, NV

Washoe County Library
Reno Central Branch
301 S. Center
Reno, NV

Washoe County Library
Stead Branch
Mount Charleston & Echo Ave.
Stead, NV

Washoe Council of Governments
350 S. Center
Reno, NV

Sparks City Hall
431 Prater Way
Sparks, NV

Washoe County Library
Sparks Branch
1125 Twelfth Street
Sparks, NV

Washoe County
Public Works Department
1205 Mill Street
Reno, NV

CARSON CITY AREA

State of Nevada
Environmental Protection Services
201 S. Fall Street
Carson City, NV

State Planning Coordinate
Capitol Building
Carson City, NV

Carson City Library
900 Roop Street
Carson City, NV

ENVIRONMENTAL PROTECTION AGENCY

EPA
Region IX Library
100 California Street
San Francisco, CA

Freedom of Information Center
EPA, Room 329
401 "M" Street
Washington, D.C.

Please bring this notice to the attention of all persons who would be interested in this matter.

Sincerely,

Paul De Falco

Paul De Falco, Jr.
Regional Administrator

PREFACE

The Draft Environmental Impact Statement/Environmental Assessment (EIS/EA) for the Reno-Sparks Joint Water Pollution Control Plant, Cross-Town Sewer and Lawton-Verdi Interceptor Extension has been produced through the cooperative effort of the Environmental Protection Agency, Region IX and the City of Reno, Nevada.

As an Environmental Assessment it serves as the written analysis submitted by the City of Reno to EPA which describes the environmental impacts of proposed alternative actions to be undertaken with federal financial assistance under Title II, Wastewater Treatment Works Construction Grants Program of the Federal Water Pollution Control Act (PL 92-500).

As an EIS, this document has been prepared in accordance with the Council on Environmental Quality guidelines and EPA regulations. The preparation of an EIS is required in this instance because the proposed alternative actions are expected to have significant effects on the environment in the Reno-Sparks area and in the Truckee River Basin.

The purpose of the EIS/EA is to:

1) Identify, analyze and assess the environmental benefits and impacts of alternatives to wastewater collection, transport, treatment, reclamation/reuse, and disposal systems for the project area, and 2

2) Publicly present all issues surrounding the project's objectives including the primary and secondary benefits and impacts so that they may be considered and resolved as openly and satisfactorily as possible.

In keeping with the purpose of the EIS/EA, as expressed above, no alternative has yet been selected, proposed for constructio,n or is recommended in the Draft EIS/EA. The most cost-effective, financially feasible, and environmentally acceptable wastewater management alternate with the appropriate system capacity will be selected by EPA and the Nevada Environmental Protection Services after public comments are received and addressed in the final EIS/EA.

Additional supporting technical data has been compiled in a separate document entitled, "Draft Environmental Impact Statement and Addenda." Another separate document entitled "Record of Public Involvement" has also been prepared to record the significant correspondence received during the preparation of the Draft Environmental Impact Statement. Copies of both of these supporting volumes may be reviewed at the public locations noted in the Letter of Transmittal.

DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE RENO-SPARKS JOINT WATER POLLUTION CONTROL PLANT, CROSS-TOWN SEWER AND LAWTON-VERDI INTERCEPTOR EXTENSION

Draft (X)
Final ( )

Prepared Jointly By:

U. S. Environmental Protection Agency
Region IX
100 California Street
San Francisco, CA 94111

City of Reno
P.O. Box 1900
Reno, NV 89505

Type of Action: Administrative

INTRODUCTION

Grant Applicants

This Environmental Impact Statement is being prepared under a Step 1 Facility Planning grant to the City of Reno awarded by the Environmental Protection Agency (EPA). After determination of an environmentally acceptable project and resolution of major issues, it will be followed by a Step 2 design grant and by a Step 3 construction grant. Federal funding under Public Law 92-500 provides up to 75 percent of the total cost.

Authority for Study

The National Environmental Policy Act of 1969 (NEPA) (Public Law

91-190) requires all federal agencies to, "...utilize systematic interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision-making which may have an impact on man's environment..." Section 102 (2) (c) of that act also requires the agency to prepare an Environmental Impact Statement (EIS) on, "...major federal actions significantly affecting the quality of the human environment..."

One of the major Environmental Protection Agency programs involving actions which are candidates for EIS's is the construction grants program as authorized by Title 2 - "Grants for Construction of Treatment Works", Section 201 (g) (1), of the Federal Water Pollution Control Act Amendments of 1972 (EWPCA) (Public Law 92-500). The Act authorizes the administrator of EPA. "... to make grants to any state, municipality or intermunicipal or interstate agency for the construction of publicly owned treatment works...". The National Environmental Policy Act implemented by executive order 11514 and the Council on Environmental Quality (CEQ) guidelines of August 1, 1973 (38FR20550) provides the basic authority for the Environmental Impact Statement which follows.

EIS Criteria

This EIS has been prepared in accordance with CEQ guidelines dated August 1, 1973 and EPA regulations dated April 15, 1975.

EIS Process

The preparation of an EIS is required by several of the criteria stated in EPA's final EIS regulations. Basically an EIS is required in this case because the project is expected to have significant effect on the human environment, specifically water quantity/water quality and land use. Further, the nature and value of these effects is at issue within the project area. The purpose of this EIS is to publicly present all issues surrounding the project's objectives, including primary and secondary impacts so that they may be resolved as openly and satisfactorily as possible. In keeping with the policy of full disclosure, the EIS has been developed as a part of a decision making process to select the most cost-effective, financially feasible, and environmentally acceptable wastewater management alternative with the appropriate system capacity in accordance with local, state and federal objectives.

BACKGROUND

Description of Study Area

The study area for the EIS is that area designated by the Washoe Council of Governments (WCOG), Areawide Water Quality Management Plan (November 1974) as the 1985-1995 regional service area for the Reno-Sparks Joint Water Pollution Control Plant (JWPCP). (See Figure 1-1.) This area is generally known as the "Truckee Meadows".

The project ~~area~~ is located in a semi-arid portion of the Truckee River Basin, east of the Sierra Nevada Mountains and west of the Virginia Range within the State of Nevada. The Truckee River is the major water course traversing the area, extending from its headwaters at Lake Tahoe to Pyramid Lake, some 25 miles north-east of the Reno-Sparks area. The upstream reaches of the river serve as the primary source of municipal water for the Reno-Sparks area.

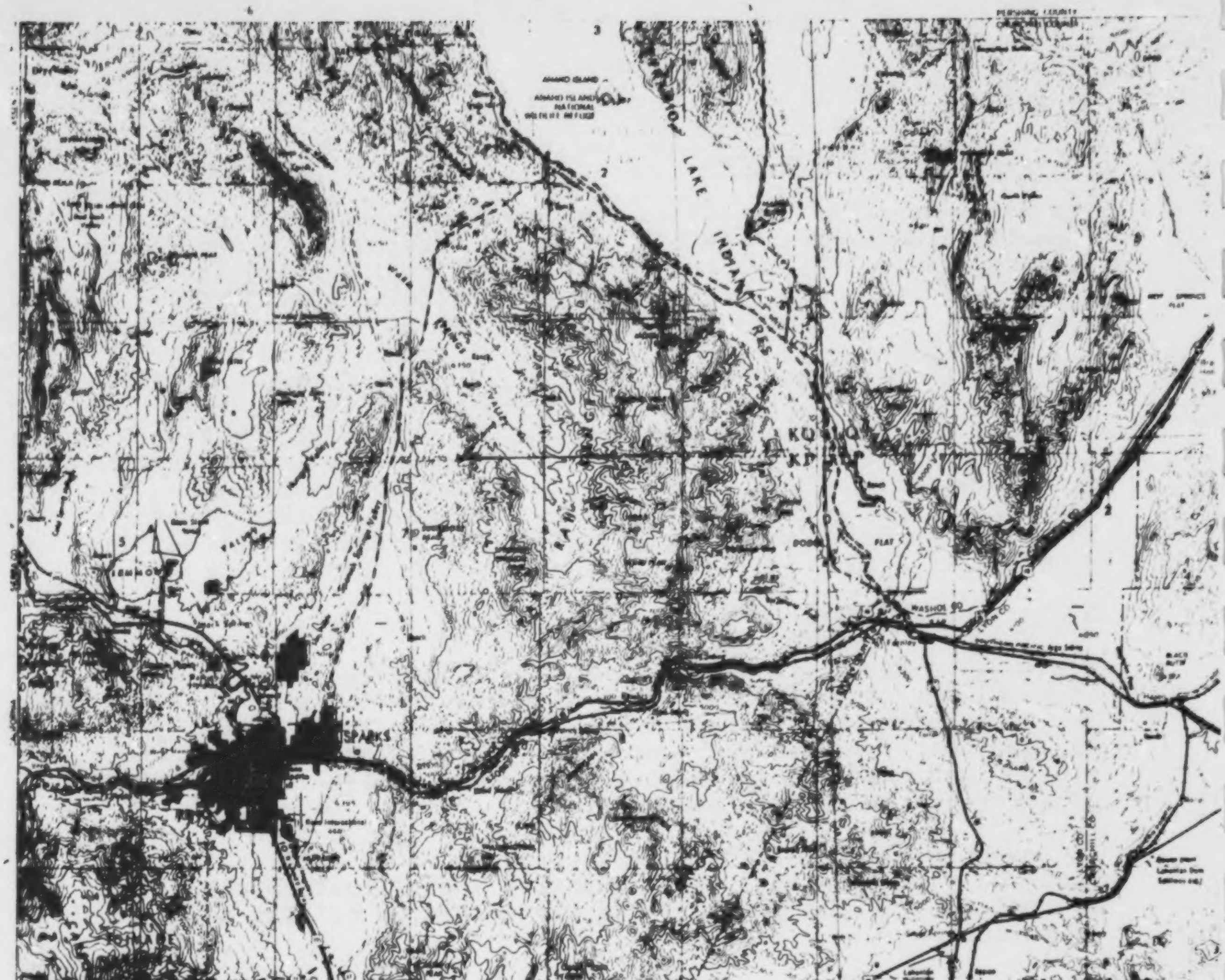
Overall Water Quality Problems in the Area

The Truckee River and Pyramid Lake Basin is affected by a variety of problems, many of which are beyond the control and scope of the Reno-Sparks Wastewater Treatment System. These issues are grouped into four areas, water quality, water quantity, water rights, and ultimate effluent disposition to place the immediate concerns of this EIS in perspective.

The major public concerns with respect to water related issues focus on water quality, water quantity and ultimate effluent disposition for the area. These issues can be briefly summarized as follows:

- Water Quality

  Water quality concerns focus on degradation of ground and surface waters through discharge of inadequately treated effluent, urban, agricultural and dairy drainage and other diffuse sources. The level of, and criteria for water quality standards are issues which have been raised repeatedly by the public. While evidence that the Truckee River water quality will continue to be degraded for some parameters by treated discharge from the JWPCP, groundwater problems in the Lawton-Verdi area as a result of septic tanks use are not currently known to be critical. Problems with local independent wastewater treatment plants add to degradation of surface and groundwaters. If urbanization occurs to the degree forecasted for the Lawton-Verdi area, the resulting density would preclude successful use of septic tanks.


PERSHING COUNTY
ANAHO ISLAND
ANAHO ISLAND NATIONAL WILDLIFE REFUGE
LAKE
INDIAN
SPARKS
WASHOE COUNTY
CARSON CITY
CARSON CITY
DOUGLAS CO
CARSON VALLEY
0
35
70
1000 FEET

REGIONAL MAP
FIGURE 1-1

Reproduced from
best available copy.

Therefore, the problem addressed in the Lawton-Verdi area is one of potential surface water and groundwater degradation.

- Water Quantity

Water quantity issues center on public concern over the increasing demand on the limited water resources in the Truckee Meadows associated with urbanization. Conversion from agriculture open space land use to urban land use will have a negligible beneficial effect on total annual flow quantity downstream from Reno. The reduction in agricultural irrigation water demands will be offset by the increased domestic demands. Municipal water will be diverted in increasing amounts, with the consumptive use (no return flow to river) highest in the summer months when the river flow rate is least.

- Ultimate Effluent Disposition

This issue relates to concerns over whether the ultimate disposition of wastewater effluent should be partially through reclamation, reuse, or continued total discharge to the Truckee River. Discharges to the Truckee River are reused for irrigation and in providing flows to offset evaporation losses in Pyramid Lake.

- Water Rights and Truckee River Litigation

The Truckee River Basin lies in portions of Nevada and California and its lower end is one of the remnants of the pre-historic Lake Lahonton. The river terminates at Pyramid Lake. The Truckee River derives the majority of its flow from the Sierra Nevada including Lake Tahoe with the remainder coming from several tributary streams on which there are regulating reservoirs constructed by the federal government as part of the Washoe project. Municipal water generally is obtained from three sources -- wells, the Truckee River and streams; the Truckee River is the main source of municipal water for the urban Reno-Sparks area of the basin.

Nevada water law is based on the right appropriation which is similar to a property right. Water rights can be transferred from one piece of land to another much like a capital asset. Since Nevada is a desert region and water is a limited resource water rights are of primary importance. The U.S. Government has pending litigation against all the water rights holders on the Truckee River.

These are therefore, focal points around which the total environmental review of wastewater management actions for the area will be assessed.

Planning Basis for Grant Evaluation

The EPA guidelines for municipal wastewater facilities planning states, "The facility planning period should extend 20 years beyond the date when the planned facility is scheduled to begin operation." This has guided the study team in selecting a planning and forecasting horizon of the year 2000 (assuming the plant can be on line by 1980).

Water Quality Planning in the Area

The federal government enacted the Water Quality Act of 1965 (Public Law 89-234) which amended the Federal Water Pollution Control Act of 1956. In accordance with this act, the State of Nevada in 1967 published its Interstate Water Quality Standards and its plan of implementation. These standards appear in the WCOG Area-Wide Quality Management Plan (W-1). In 1972 the federal government enacted the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500). In 1973 the Nevada State Environmental Commission adopted water pollution control regulations which established a waste discharge permit program, water quality standards and criteria, a classification system for all reaches of state waters and classified some of the waters according to this system.

The Area-Wide Water Quality Management Plan is the third in a series of planning reports for water and wastewater facilities in Washoe County:

- Rural Communities - Water and Wastewater Plan, prepared for Washoe County by Walters Engineering, 1973.
- "Chapter 6 Public Utilities - Water, Sanitary Sewer, Storm Drainage," prepared for Washoe County by The Regional Planning Commission, 1972.
- Unified HUD, EPA Water Quality Management Plan, Washoe County, prepared for Washoe Council of Governments by Walters Engineering and Metcalf and Eddy, 1975.

Water Quality Objectives

In accordance with Section 303 (e) of the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500) the Washoe Council of Governments (WCOG) has had an area-wide water quality management plan prepared by Walters Engineering and Metcalf and Eddy Engineers, (W-1), which was completed in November of 1975. This report basically identifies the Truckee River water quality standards and existing and projected deficiencies; establishes total maximum daily waste loads and allocations to significant river segments; and recommends effluent standards, needed improvements and priority ranking of necessary projects. Expansion of the JWPCP, extension of the Cross-Town Sewer and the Lawton-Verdi Interceptor are among the first three items in the priority list of ten items.

On January 10, 1975 the EPA issued National Pollutant Discharge Elimination System (NPDES) Permit No. NV0020150 which establishes quality requirements for Reno-Sparks JWPCP effluent to be discharged to the Truckee River. These requirements were established by EPA based on waste load allocations for the Truckee River as recommended in the Area-Wide Water Quality Management Plan and on standards included in Water Pollution Control Regulations issued by the State of Nevada, Environmental Protection Services, October 24, 1973.

Requirements established by the NPDES permit for discharge from the expanded plant include the following:

	Discharge Limitations	
Effluent Characteristic	30-day Avg.	7-day Avg.
BOD (5-day, 20°C)	10 mg/l	15 mg/l
Suspended Solids	20 mg/l	30 mg/l
Total Phosphorus (PO_4)	3.0 mg/l	4.5 mg/l
(P)	1.0 mg/l	1.5 mg/l
Fecal Coliform Bacteria	200/100 ml	400/100 ml
Dissolved Oxygen	Greater than 6.0 mg/l at all times	
ph	Within range 6.5 to 8.5 at all times	

The NPDES Permit for the Reno-Sparks JWPCP called for achieving compliance with the effluent limitations specified for discharges in accordance with the following schedule:

(1) January 1, 1976 Completion of facilities plan.

(2) January 1, 1977 Completion of plans and specifications for facilities necessary to assure compliance with effluent limitations.

(3) On May 15, 1975 the U.S. Environmental Protection Agency transmitted to the City of Reno a memorandum of Understanding pertaining to the determination of the need for an EIS. The EIS procedure has added about two years to the planning process.

From the above, it can be seen that progress toward compliance with the NPDES date is approximately one year behind schedule.

The State Environmental Protection Services advised the City of Reno on March 28, 1975 that ammonia removal by nitrification or other means may be required. The City of Reno was later advised that any proposed improvement program must provide for phosphorus removal to meet current receiving water quality requirements and that the program must be in compliance with the EPA Basin Management Plan to be eligible for construction grant funding.

Related Planning Efforts

The Nevada State legislature created the Truckee River Task Force Committee to coordinate and review Truckee River Planning related to water quality. Interstate water planning for the Truckee River has been slowed by problems associated with interstate and interlocal governmental agreements. In addition to the Task Force Watch Dog Committee, there are a number of agencies with jurisdictional and planning responsibilities for various reaches of the Truckee River. These agencies appear in the Area-Wide Water Quality Management Plan.

The Washoe Council of Governments is initiating an Area-Wide Wastewater Management Study pursuant to Section 208 (PL 92-500). This study will focus on diffused sources of pollution to the Truckee River and management strategies to remove these problems.

A combination of legislative and jurisdictional actions has regulated the water rights of the state in this century from 1903 to the present day.

Most recent actions are the Truckee River Agreement of 1935 and the Orr Ditch Decree of 1944, which incorporates the earlier agreement and refines water rights in the Truckee River Basin. These agreements resulted in the current Floriston Rates which determine the flow in the river. The Orr Ditch Decree is a major subject of the Paiute Indian Tribe suit.

PROJECT BACKGROUND AND DESCRIPTION OF VIABLE ALTERNATIVES

History of the Project

In 1962 the Cities of Reno and Sparks entered into a joint agreement to construct and operate sewage treatment facilties and interceptor lines serving both communities on the basis that such facilities could be built and maintained jointly with substantial savings to taxpayers.

The present treatment plant, located on the south banks of the Truckee River east of Steamboat Creek at Vista, was completed in 1967 with a design capacity of 20 million gallons per day (MGD).

The cost of the plant was originally divided equally between the two communities; providing each with one half the plant's capacity. In 1968 it became obvious that the City of Sparks would not be utilizing its flow appropriation, while Reno appeared to be requiring more than its 50 percent share. The two cities entered into a supplemental agreement which provided for Reno to lease from Sparks the excess capacity rights needed to handle its flows in excess to 10 MGD. In 1972, with the plant at near capacity, the City of Reno recognized the need for additional treatment capacity to provide for future urbanization of the area.

In an agreement of March 1974, later modified, the Cities of Reno and Sparks proposed to share the cost of expansion 85 percent - 15 percent respectively (17 MGD and 3 MGD for a 20 MGD expansion). It was also agreed that the cost of any advanced wastewater treatment and process improvements would be prorated between Reno and Sparks on the basis of their respective share in the total treatment plant capacity.

The wastewater treatment plant expansion program was initiated in 1974 when the city retained the firm of Kennedy Engineers, Inc. to prepare the Facilities Plan Report.

In addition to the plant expansion, the City of Reno is proposing to extend its sewer service area westerly to Verdi by construction of an interceptor sewer line and reinforcement of the existing interceptor sewer system.

The existing interceptor sewers serve both Reno and Sparks and include stations which meter the flows contributed by each city. Within Reno, sewage is collected and conveyed through a system of sewers which discharge into either the North Truckee Meadows

Interceptor, the Mill Street Interceptor, or the South Truckee Meadows Interceptor.

Planning for the Lawton-Verdi Sewer started with preliminary reconnaissance studies in 1973 which resulted in the 1975 Facilities Plan Report prepared by the engineering firm of SEA, Inc.

The Facilities Plan presented alternatives for routing the sewer line between Lawton and Verdi and its connection with the existing portion of the Cross-Town Sewer in Dickinson Road. The Plan also made provisions for a supplemental section of sewer through the downtown area which will permit sewage flows to be diverted through the Cross-Town Sewer to the Mill Street system from the overloaded North Truckee Meadows Interceptor.

The proposed Cross-Town Sewer would also provide capacity to handle the flows collected by the Lawton-Verdi Interceptor Sewer.

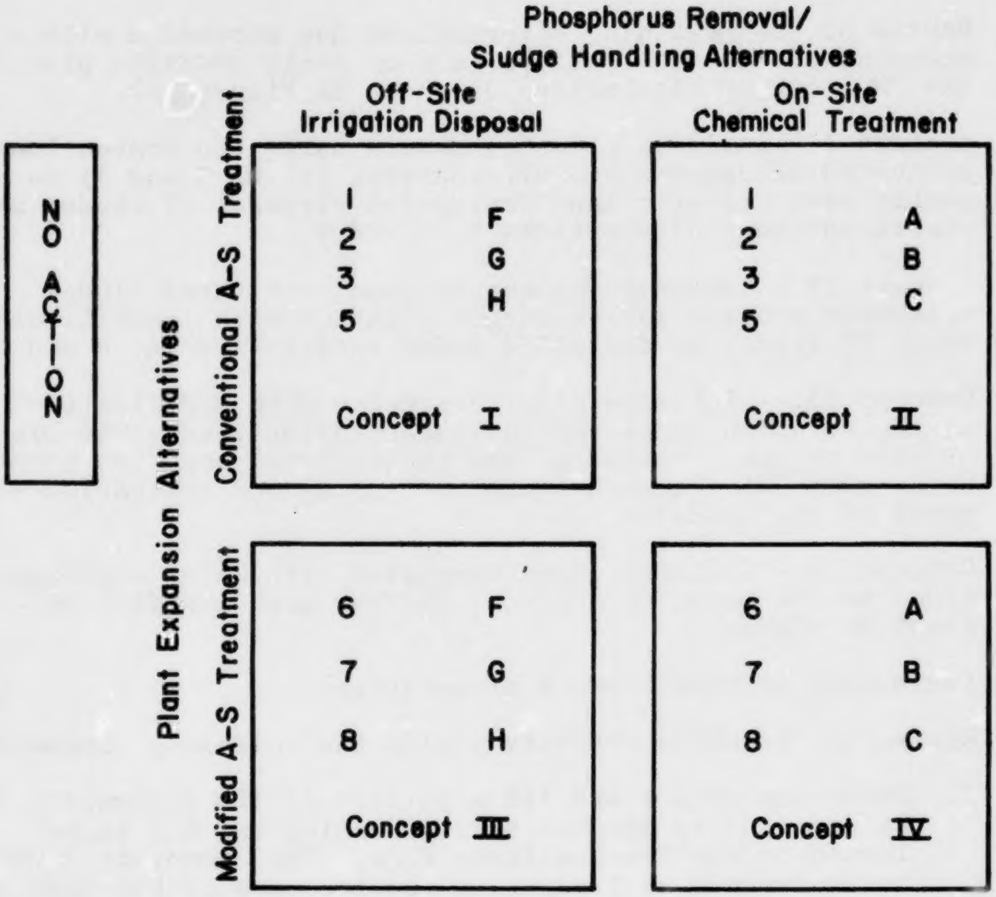
This Environmental Impact Statement is the concluding element in the list of requirements which must be completed and approved by the local, state, and federal governmental agencies to conclude the Step 1 Phase of the Clean Water Grants Program of Public Law 92-500.

Reno-Sparks Joint Water Pollution Control Plant Expansion Alternatives

- Alternatives Screening

  Projected future flows, as well as water quality standards, dictate that an action be undertaken to increase the degree of treatment as well as the design capacity of the Reno-Sparks Joint Water Pollution Control Plant (JWPCP). A series of alternative processes and methods were considered to expand the plant, provide the capability of removing phosphorus from the wastewater and effectively handle the sludge generated in conjunction with the expansion project.

  Certain alternatives were eliminated fairly early from further consideration because of high cost, adverse effect on water quality, and untested technology. One of the sludge treatment alternatives (Alternate D) was modified further as three additional alternatives (F, G, H) providing consideration of land treatment disposal systems for the sludge. The net result of this screening process was the development of the conceptual matrix in Figure 1-2 which displays the viable combination of alternatives presented in the Facilities Plan.


Phosphorus Removal/
Sludge Handling Alternatives
Plant Expansion Alternatives
NO ACTION

	Off-Site Irrigation Disposal	On-Site Chemical Treatment
Conventional A-S Treatment	1, 2, 3, 5 F, G, H Concept I	1, 2, 3, 5 A, B, C Concept II
Modified A-S Treatment	6, 7, 8 F, G, H Concept III	6, 7, 8 A, B, C Concept IV

CONCEPTUAL MATRIX TREATMENT/SLUDGE HANDLING ALTERNATIVES

Source: (K-1)

Figure 1-2

- Viable Alternatives: JWPCP

  Review of the remaining alternatives has proceeded with a grouping of the alternatives in four basic concepts plus the "No Action" alternative as shown in Figure 1-2.

  Concept I - includes plant expansion using the conventional activated sludge process alternatives (1, 2, 3 and 5) together with off-site land irrigation disposal of sludge as described under Alternatives F, G and H.

  Concept II - includes the conventional activated sludge treatment process for expansion together with landfill disposal of sludge as described under Alternatives A, B and C.

  Concept III - includes plant expansion with modification to the aeration tanks and equipment to facilitate the use of pure oxygen, instead of the conventional aeration process using plain air, together with off-site land irrigation disposal of the sludge.

  Concept IV - includes plant expansion with major modifications to the aeration process together with landfill disposal of sludge.

- Evaluation of Viable JWPCP Alternatives

  Review of the above concepts yields the following comments:

  1. Under Concepts I and III a portion of the wastewater would be exported to Spanish Springs Valley and not be returned to the Truckee River flow. The amount of diverted water depends on irrigation requirements of the site. Two pipelines would be constructed to convey the sludge and supernatant flows. Ponds would be built to store sludge and phosphorus-rich supernatant in the winter months.

  2. Under Concepts II and IV the entire plant effluent would be discharged into the river. Sludge generated at the plant would be disposed of by land disposal at a site at some distance from the plant or by incineration.

  3. Concept I requires the least amount of chemicals while Concept IV requires the greatest amount of chemical usage.

4. Concepts I and III have lower labor requirements than the others. These sludge-irrigation-use concepts would need from 5 to 6 less operating persons.

5. Concept I has the lowest energy needs with its air diffusion system for the activated sludge process.

6. Concepts I and III would result in less water and solids being released to the Truckee River system, but will augment the groundwater supply at the irrigation site.

7. Concepts II and IV effluent would contain a residual of calcium and/or aluminum to the Truckee River system.

8. Concepts I and III would not require expensive sludge handling units and will offer an opportunity to return water and nutrients to the land.

9. Concepts I and II have the lowest percent worth costs as shown:

Concept I	\$32.8 - \$40.8 Million
Concept II	\$25.9 - \$37.7 Million
Concept III	\$34.3 - \$76.9 Million
Concept IV	\$24.5 - \$72.9 Million

10. Concept IV has the lowest capital costs expressed in 1975 dollars, ranging from \$11.96 million for Alternatives 6C and 7C, to \$13.24 million for Alternate 8A.

11. Sludge incineration under Concept II requires greater amounts of energy and will result in significant atmospheric discharges.

12. If no additional plant facilities are constructed and projected growth is realized the treatment facility will be overloaded by 1978, effluent quality would decrease and compliance with sludge handling and phosphorus removal requirements could not be met.

Cross-Town Sewer and Lawton-Verdi Interceptor Alternatives

- Cross-Town Sewer Alternatives Screening

The Cross-Town Sewer extension planning takes into account and is influenced strongly by the extensive existing network of sewage interception into which it is tributary. The Cross-Town Sewer has been designed for the purpose of providing relief capacity for the currently overloaded North Truckee Meadows Interceptor. The Cross-Town sewer will also provide the point of connection to the sewer system for the Lawton-Verdi Interceptor.

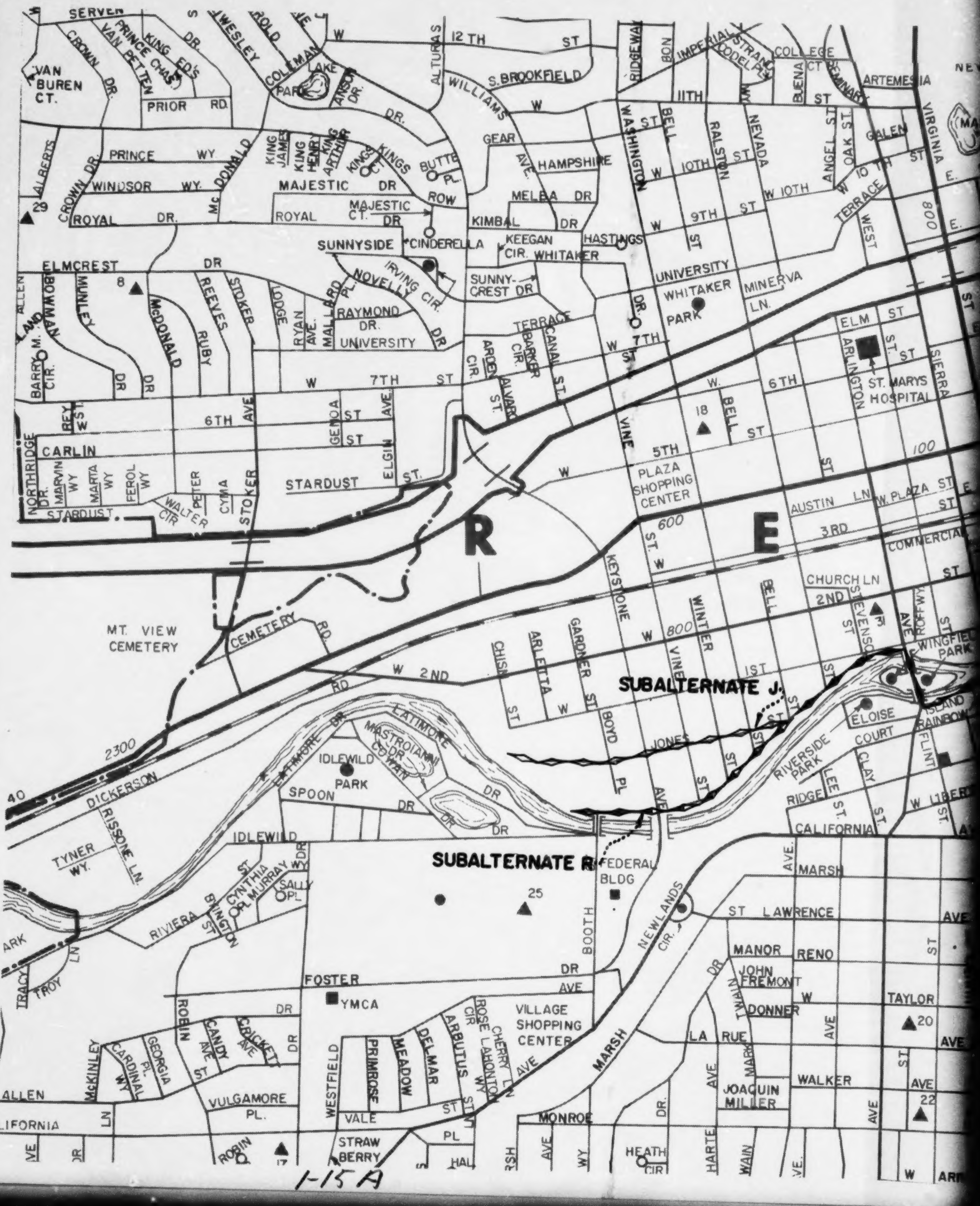
The clearest mandate for action centers on the Cross-Town Sewer project. Protection of public health, safety and welfare as well as Truckee River water quality from the serious threat of raw sewage overflows from presently overloaded sewers would be accomplished with implementation of this project. The action is compatible with planning goals for the area and is an intergal part of City of Reno Master Sewerage Program. This project will facilitate urbanization in the northwest and west Reno areas and serve as a hook-up point for the Lawton-Verdi Interceptor, facilitating urbanization in that corridor as well. In addition it will allow for additional sewer connections in downtown Reno.

- Viable Alternatives: Cross-Town Sewer

This sewer line involves a total of six routes described in the Facility Plan and labeled A through F for description purposes. The proposed interceptor sewer will connect two existing sections of the Cross-Town Interceptor. The proposed connection can be considered to consist of two sections. The first described as running from the intersection of Mill Street and Kirman Avenue through the downtown area and across the river to the intersection of Jones Street and Riverside Drive, for which there are only three route alternatives.

The A and B options (see Figure 1-3) follow the same route and are herein identified as the AB alignment; C and D, as presented in Figure 1-4, follow the same route and are known as the CD alignment, and the E and F route is identified as the EF alignment. The EF alignment was later discarded from further consideration on the basis of both high initial construction costs as reported in Table 1 of Appendix A of the Facility Plan, and the obvious significant environmental considerations of attempting to install an interceptor sewer along the banks of the Truckee River.

For the second section from Jones Street and Riverside Drive to the westerly limits of the project the sewer interceptor can be installed on either Riverside Drive or Jones Street and this option is labeled as either the R or J Sub-alternative.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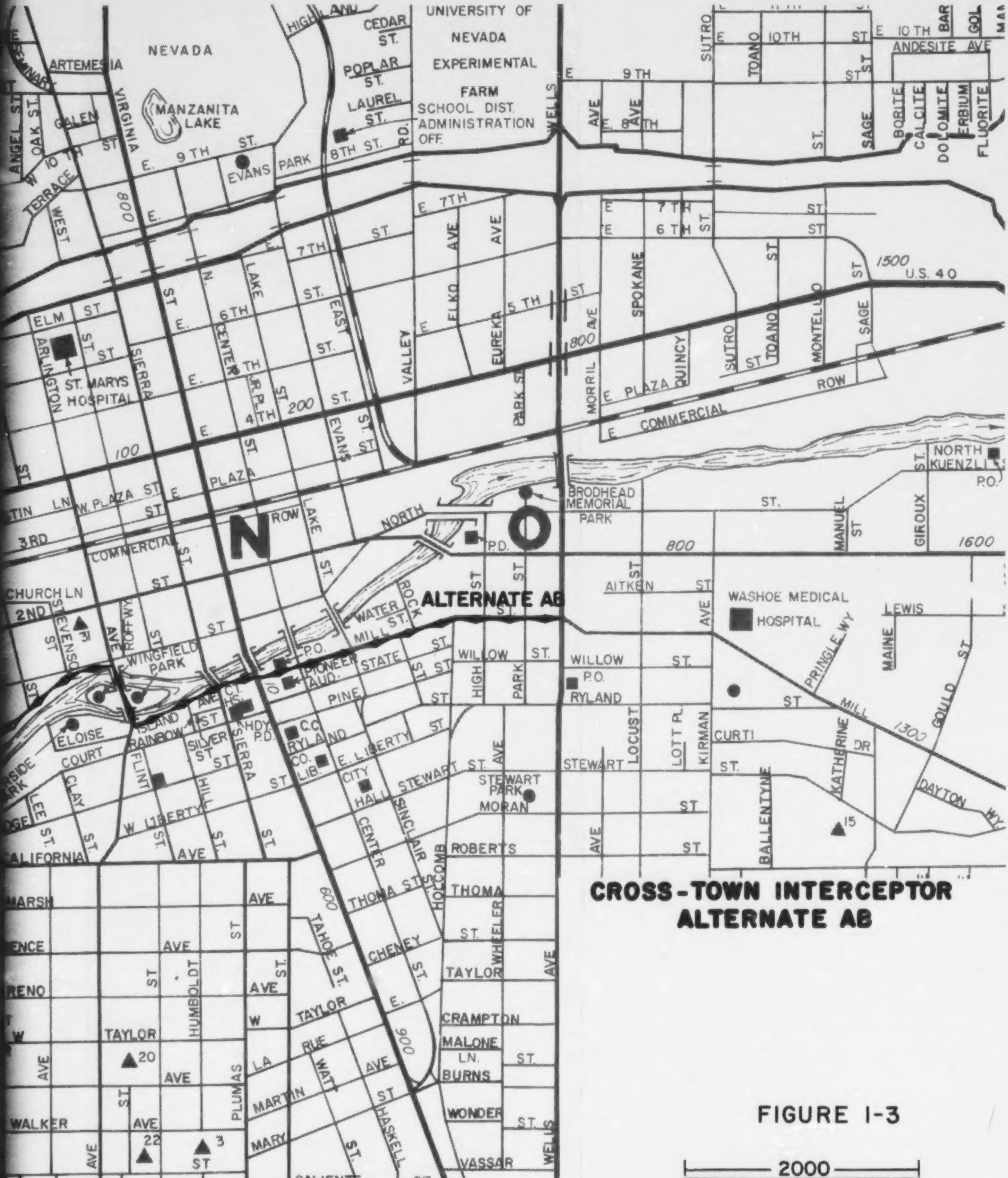
I-15A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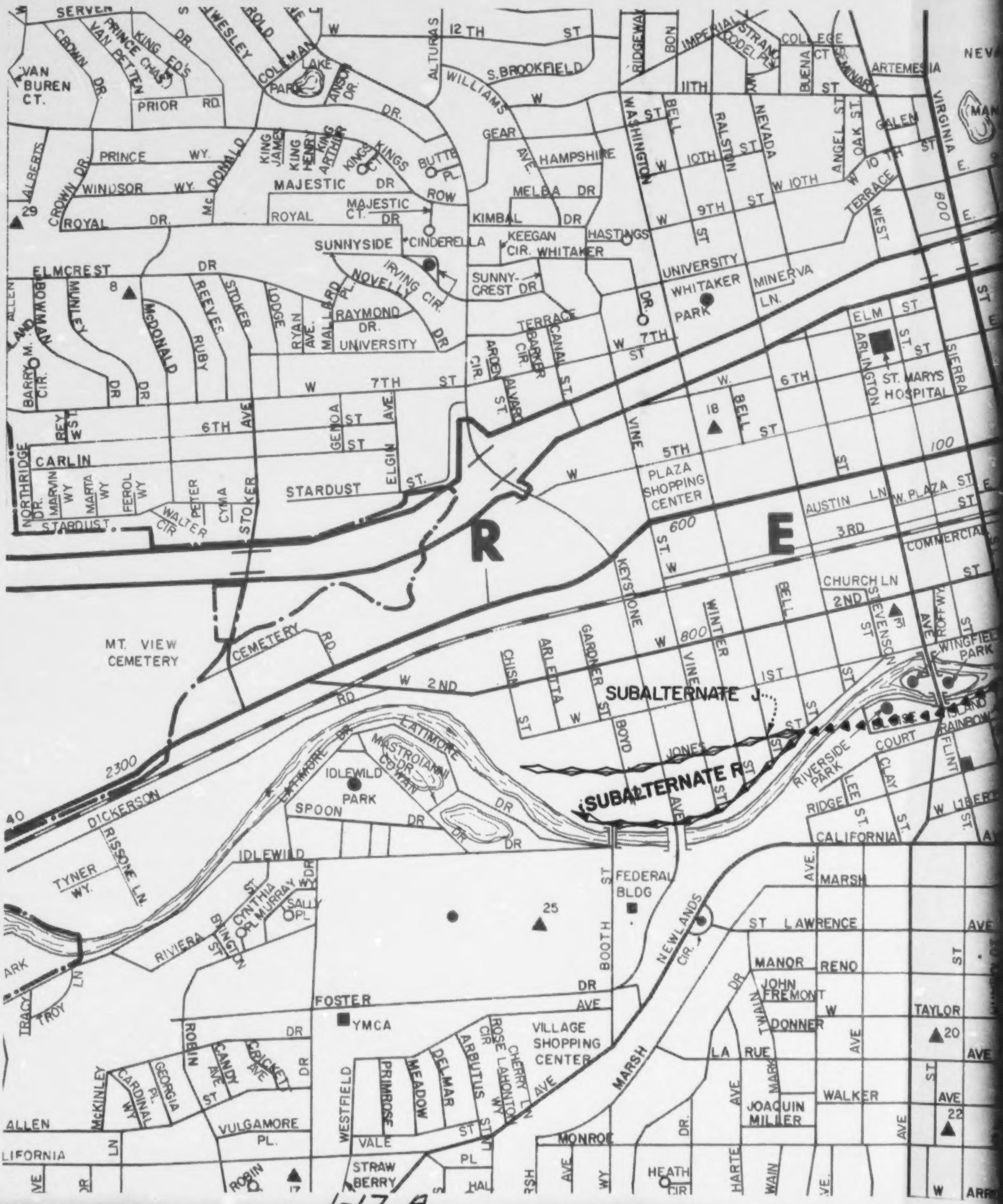
CROSS-TOWN INTERCEPTOR ALTERNATE AB

FIGURE 1-3

2000

SCALE

1-15-B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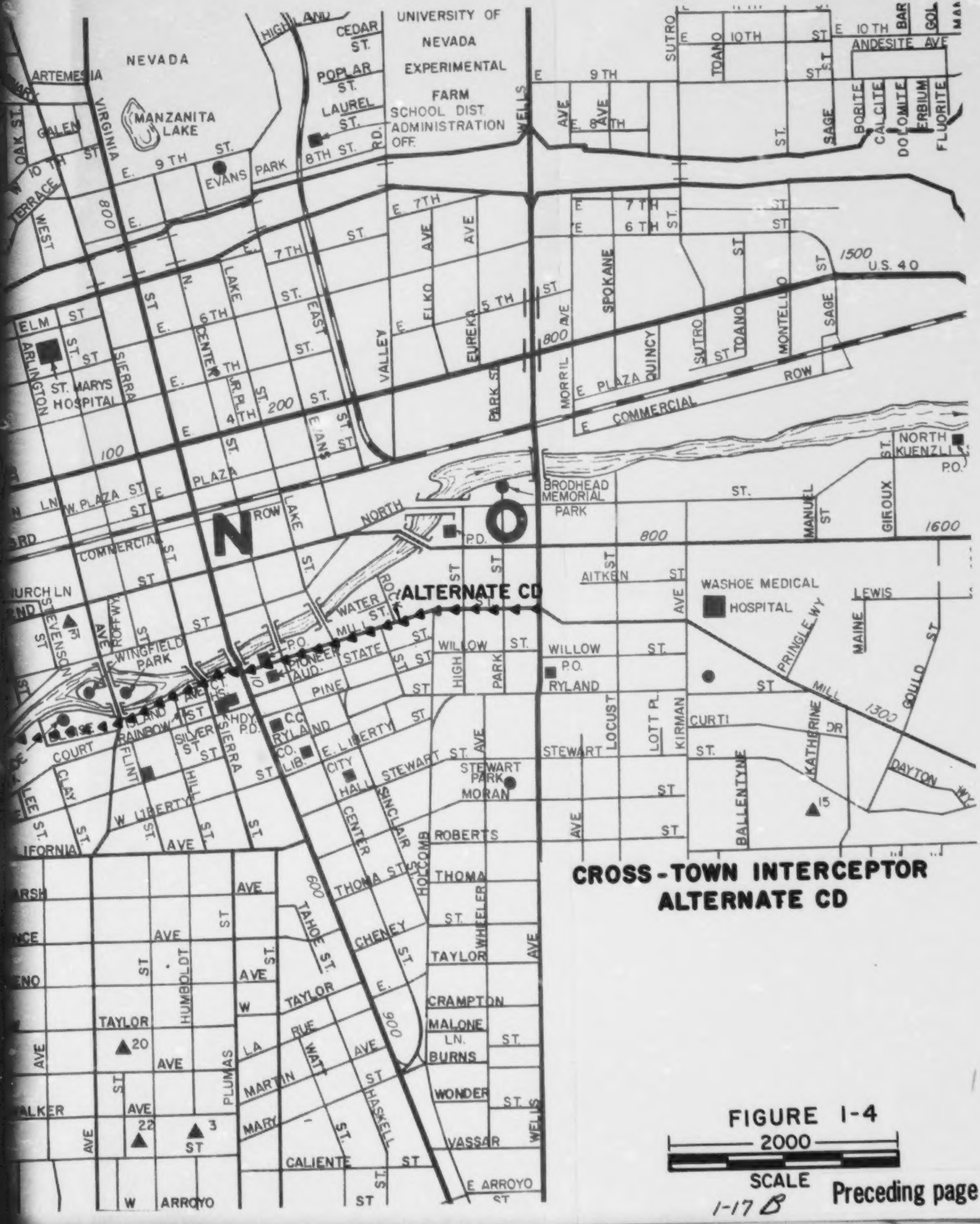

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ST. MARYS HOSPITAL
WINGFIELD PARK
BRODHEAD MEMORIAL PARK
WASHOE MEDICAL HOSPITAL
STEWART PARK
MORAN
PIONEER AUD.
CITY HALL
CO. LIB.
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CROSS-TOWN INTERCEPTOR ALTERNATE CD

FIGURE 1-4

2000

SCALE

1 P.

1-17B

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- Evaluation of the Viable Cross-Town Sewer Alternatives

Review of these alternatives as well as a "no project" option yields the following comments:

1. The AB-R Alternative contains the shortest length of pipe at the lowest estimated construction cost of $1,657,000.

2. The J Sub-alternative will create a significant traffic problem at Jones Street and the Keystone Avenue bridge.

3. The CD Alternative with its longer diagonal river crossing will have a significantly greater disturbance of the aquatic flora and fauna.

4. The R Sub-alternative may have some minor scenic and aesthetic impacts on the Reno Scenic Drive in that area.

- Lawton-Verdi Interceptor Alternatives Screening

The initial screening of sewerage alternatives indicates that options which could be considered include:

1. Septic Tank Maintenance Districts.
2. Local Treatment Plants.
3. Interceptor Sewer Project.
4. No Project.

Septic tank use is dependent on local soil conditions and density of urbanization. Low density residential development can be accommodated by septic tanks; however, medium and high density residential development; commercial and industrial uses are not adequately served by septic tanks. The Facilities Plan forecasts substantial medium density residential land use. At this time a land use plan has not been completed by the Regional Planning Commission; therefore the kind and amount of residential, commerical, industrial, open space/recreation, public and other land uses are not known. However, the density of residential development required by the Facility Plan population forecasts is normally accompanied by such ancillary land uses and these have been assumed in the analysis of land use impacts. Preliminary findings by the Regional Planning Commission staff were considered in the Facility Plan preparation and in this EIS. Under the conditions assumed, the use of septic tanks would not be feasible.

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Community treatment plants and stabilization ponds of questionable efficiency and reliability are another alternative to serve the projected population growth. Wastes from these types of facilities will ultimately find its way into the groundwater table and into the Truckee River above the point of withdrawal for domestic water supply. The increasing number of individual treatment facilities could make effective operation and monitoring very difficult which will have the combined effect of reducing the high water quality standards of the area. Economics of scale and plant operating efficiency, available on a large regional facility, would be absent in local treatment plants.

The no project alternative would force use of either septic tanks or local treatment plants or would prevent urbanization in the Lawton-Verdi corridor. Under the projections in the Facility Plan, the feasible alternative is some form of interceptor sewer to convey sewage to the JWPCP.

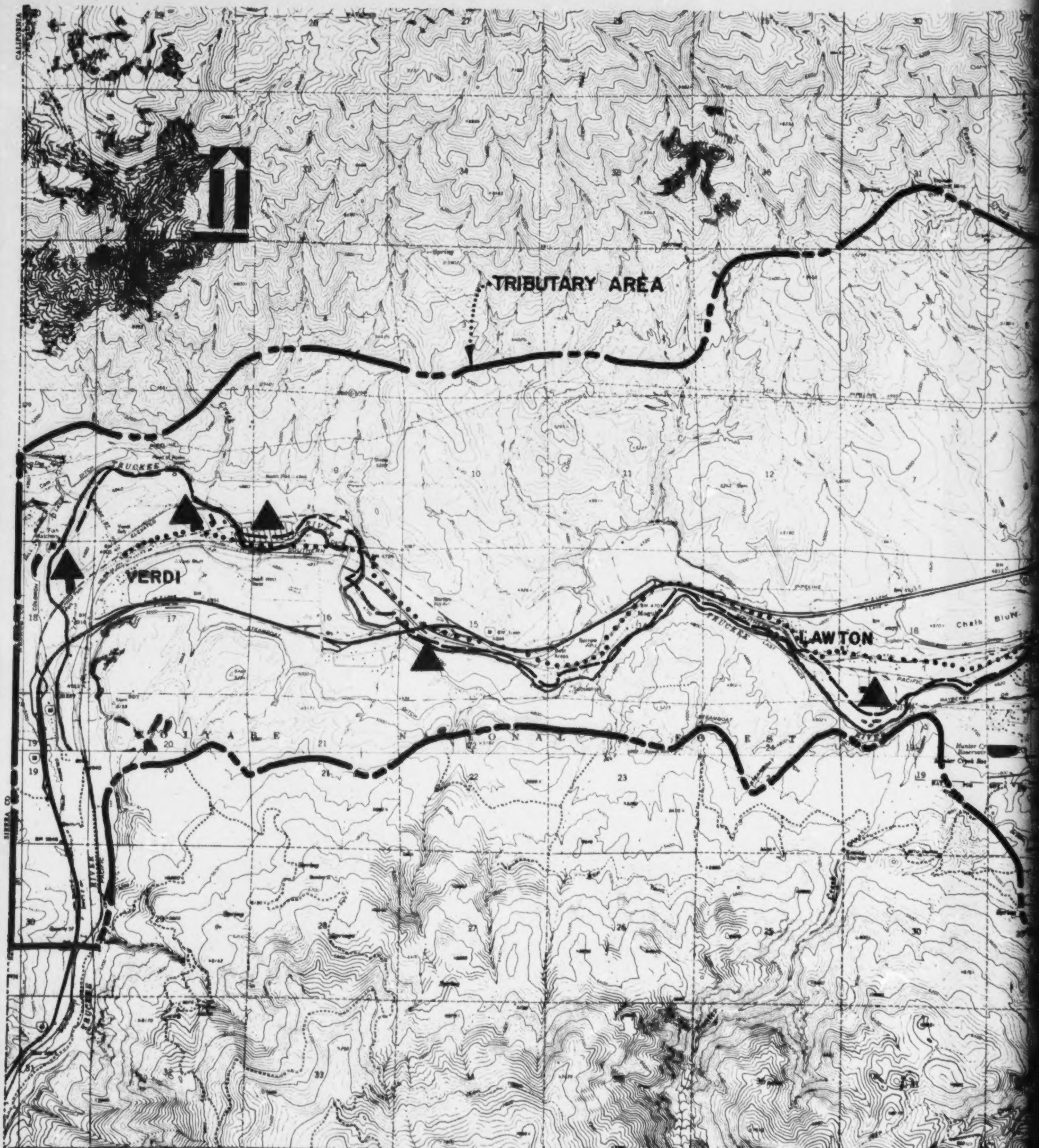
- Viable Alternatives: Lawton-Verdi Interceptor

This interceptor sewer involves three alternate routes described in the Facility Plan, a route along the river, a route along the rail line and a combination of the two.

- Evaluation of Viable Lawton-Verdi Interceptor Alternatives

Initial screening for the environmental assessment concluded that the combination alignment be discarded from detailed consideration and review of the other routes yields the following comments:

1. The river route, as presented in Figure 1-5, includes twelve main line crossings while the railroad route only requires four crossings of feeder services which potentially impact the water quality in the Truckee River.
2. The railroad route, as shown in Figure 1-5, requires seven local pumping stations to serve low lying areas.
3. The railroad route will require almost 4000 lineal feet of trestle construction which will affect the natural beauty of the area.
4. The river route is more likely to be located below the water table and subject to inundation during floods with the resulting potential adverse impact on groundwater quality.


TRIBUTARY AREA
VERDI
LAWTON
TRUCKEE
Chalk Bluff
PACIFIC
TOIYABE NATIONAL FOREST

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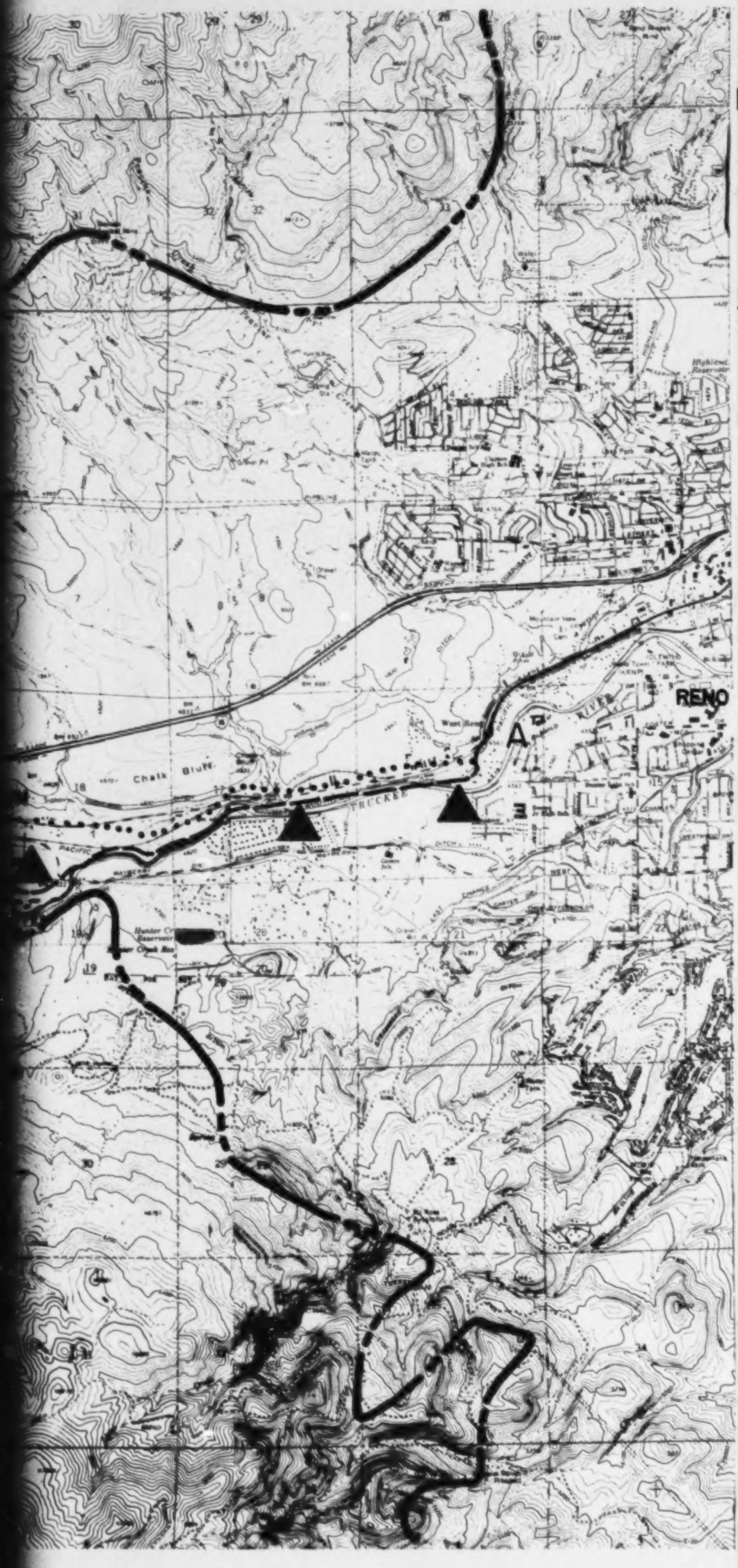
best available copy.

LAWTON-VERDI INTERCEPTOR ALTERNATES


RENO
Chalk Bluff
TRUCKEE
PACIFIC
RIVER

LEGEND

— — — — RIVER ALTERNATE

.... RAILROAD ALTERNATE

▲ PUMP STATION

FIGURE I-5

0 4000 8000 12000
SCALE

1-21 B

1 P.

5. The railroad route to Verdi has the lowest construction cost of $8,918,000 which is almost $600,000 less than the river route.

6. The sewer line installation to Lawton only is estimated to cost $4,050,000 (along the river route). If the sewer line is installed along the railroad route to Lawton only at this time and no action is taken now to continue the line to Verdi, the environmental impacts could be minimized and a goal of concentrating future growth around an existing urban core where services can be preserved.

7. If no interceptor project is constructed, major adverse impacts would include risk of groundwater contamination, potential risk of surface water contamination with associated effects on aquatic biota and significant changes and restraints to the planned development and urbanization in the Lawton area.

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SUMMARY ENVIRONMENTAL IMPACT EVALUATION OF VIABLE PROJECT ALTERNATIVES

Methodology

The environmental assessment of the project alternatives is presented in the format specified in the CEQ Guidelines. These guidelines prescribe that the existing environment be described in terms of natural physical, man-made and socio-economic parameters so as to identify environmentally sensitive issues subject to primary and secondary project impacts. The project and its alternatives are described and an initial selection of viable alternatives is made. The viable alternatives are then subjected to an impact analysis in which a forecast is made of the future environment with the project. The alternative future environments are compared with one another and with future environment with no project, as required by CEQ guidelines. Mitigating measures which can be implemented to reduce or eliminate adverse impacts are also presented. The balance of the report details unavoidable, short term, long term and irreversible impacts. Recommendations for specific project selection will be made after formal hearings and receipt of public input concerning the project alternatives.

Environmental Goals and Constraints

The Reno-Sparks Joint Wastewater Treatment Plant planning has the goal of achieving and operates within, a combination of federal, state and local mandatory and/or advisory regulations with respect to a number of parameters. Chief among these are the NPDES discharge requirements, the State of Nevada water quality standards, as they are applied to various reaches of the Truckee River, and federal air quality standards. Other standards such as county, state and federal drinking water standards, nonpoint source water quality and point source air quality standards also apply. In addition, there are a series of laws, policies and regulations, such as federal legislation encouraging floodplain management and protecting rare or endangered plant and animal species which are related ultimately to the shaping of urbanization. The discharge standards involve primary impacts; all the others involve secondary and tertiary impacts of the proposed project.

- Wastewater Treatment and Discharge Requirements

  The Reno-Sparks JWPCP is presently capable of meeting the effluent quality requirements set forth in the existing interim permit. Phosphorus removal will be required by mid 1977.

The state water quality standards applicable to the reach of the Truckee River below the JWPCP at Vista are accounted for in the NPDES discharge standards. In September 1976, the state assumed the permit issuance responsibility, previously handled by EPA.

- Air Quality Requirements

Federal air quality standards, currently including suspended particulates, carbon monoxide, hydrocarbons, oxides of nitrogen, sulfur dioxide and photochemical oxidants, must be achieved by certain mandated dates. The State of Nevada and Washoe County air quality standards for suspended particulates, carbon monoxide and photochemical oxidants are presently being exceeded. Carbon monoxide levels are forecasted to reach standards by the year 1981. However, national standards for particulates and oxidants are estimated to continue to be violated through the year 2000.

The following summarizes the forecasted impacts of the proposed actions (JWPCP, Cross-Town and Lawton-Verdi) under each of the viable alternatives in addition to the no project option for each of the projects. Regional impacts and effects on the lower Truckee-Pyramid Lake are analyzed considering all three projects together. Site environs impacts are considered for each of the three projects separately.

None of the regional level impacts are particularly sensitive to the project design alternatives, but rather to the project versus no project option. Many of the impacts of the site environs and lower Truckee-Pyramid Lake level are also insensitive to project design alternatives. Those impacts which are design-sensitive will be identified as such.

Minimal Regional Secondary Impacts

Impacts on the regional topography, scenic and aesthetic environment, climate, recreation, resources, drainage and flood control facilities, acoustics environment, groundwater hydrology and quality, water use and Truckee River flow quantity have been determined to be minimal as a result of project implementation under any of the viable alternatives.

If the no project alternative is chosen, those minimal effects can be avoided, assuming no further population growth occurs. If population growth continues, with urbanization at a lower density to accommodate septic tanks and local treatment plants, groundwater quantity/quality will be adversely affected; however the effect on flood facilities and basin hydrology would be somewhat reduced.

Significant Regional Secondary Impacts

- Regional Surface Water Quality

Implementation of the project under any of the viable alternatives will reduce the need for local treatment facilities and septic tanks. This will have a positive impact on surface waters and near surface water quality in that forecasted residential land use densities will not permit continued safe use of septic tanks as a means of sewage disposal. Local treatment facilities do not operate as efficiently as a large, regional facility. This is particularly significant in the upstream reaches of the Truckee River which serve as the primary source of municipal water for the study area. As agricultural and open space land use are replaced by urban land use, storm runoff which now percolates into the ground will be replaced by urban runoff flows. Pesticides and fertilizers common to agricultural areas will be replaced in storm runoff by urban flows containing petrochemical substances. These non-point source water quality characteristics, and treatment and mitigation thereof, are the subject of a 208 planning study that has just gotten underway.

If the no project alternative is selected, and there is no significant growth, there will be little change in surface water quality. If population growth continues to occur in the absence of the project, increased reliance on septic tanks and local treatment facilities will increase the potential for adversely affecting the groundwater and, ultimately Truckee River water quality.

- Demographics

The facility planners have used an adjusted WCOG population forecast as the basis of the design population for the expansion project. The WCOG 1995 Regional Service Plan population forecast of 253,705 was assumed in the EIS to occur in the year 2000; this corresponds to a total equivalent Regional Service Area population of 296,180, including tourists.

The design population forecast used by the facility planners is forecasted mid-range in a wide band of forecasts made by a number of government, university research and private agencies. These forecasts are based on economic and demographic trends and assume necessary urban facilities will be available to accommodate the populations involved.

Since population forecasting is not precise, a number of factors, such as water conservation and reduction in per capita wastewater flow, could affect the population represented by a given total wastewater flow. Most of the significant impacts are secondary population-derived. The population used for purposes of impact assessment for the Regional Service Area is 296,200. This will make a conservative worst-case assessment available to decision-makers who must consider the project alternatives and their impacts. If the project is staged, the implementation will be such that the full design population would be accommodated at the time the demand occurs.

- Land Use

Implementation of the project, including the JWPCP expansion, the Cross-Town Sewer extension and the Lawton-Verdi Interceptor under any of the design alternates will facilitate urbanization and population expansion with significant land use impacts. By the year 2000, according to population distribution forecasts in the Facilities Plans, urbanization in Reno-Sparks will have consumed about 10 square miles to accommodate the expected population increase. This is approximately 13 percent of the remaining available stock of developable land in the Reno-Sparks area. In the area extending from the western Reno city limit through Lawton to Verdi, residential development and population increase is estimated to consume an additional 10 to 15 square miles of area by the year 2000 depending on the density and ancillary development assumed. This is as much as 87 percent of the available stock of developable land in the Lawton-Verdi corridor. If this projected intense urbanization of the Lawton-Verdi corridor does not occur and the entire forecasted population locates in the Metropolitan Reno-Sparks Area, it would consume approximately 20 square miles or about 26 percent of the available supply of developable land. Thus, the project will have significant secondary land use impacts, particularly in the Lawton-Verdi corridor. The Regional Planning Commission is up-dating the general plan to provide a current policy to guide and control future land use.

If the no project alternative is chosen for the treatment facility expansion, and population continues to increase, future urbanization will have to rely on septic tanks or local treatment plants. The result will be that development which does occur will be at a lower density than is currently the practice, and a greater amount of land will be used to accommodate the population.

- Urban Systems and Energy Use

Transportation

Urbanization accommodated by the project will have a significant impact on the transportation network, regardless of the design alternative. Such urbanization has been anticipated by transportation planners in the form of a regional transportation plan which is updated continually (Truckee Meadows Urban Transportation Study). The most significant impact will be in the Lawton-Verdi area, particularly if significant urban development occurs in the area between Lawton and Verdi. This level of urbanization had not been anticipated in the Transportation Study. To accommodate the predominantly Reno-oriented travel from the Lawton-Verdi corridor, future planning should provide for extension of future east-west arterials into the Verdi area. Daily average vehicle miles will increase from approximately 2.3 million to approximately 4.7 million by the year 2000 in the study area.

In the absence of any projects - the no project alternative - any urbanization which occurs will probably be at a lower density and total population growth. The net effect may be to create an urban pattern in which there are fewer but longer trip lengths. The possible effect would be to increase overall daily average vehicle miles, although this has not been specifically forecasted as part of the current EIS.

Solid Waste

Increased urbanization will place a greater demand on the solid waste system; however, the current site is estimated to have a life of 200 years and this impact is considered minor.

Other Sewerage Facilities

The impact of the plant expansion, and particularly the Cross-Town Sewer extension, on other parts of the sewage collection and treatment system is significant and beneficial. Sewage flows from areas tributary to the North Truckee Meadows Interceptor would be diverted to the extending Mill Street (Cross-Town) Interceptor. The North Truckee Meadows Interceptor, which is currently overloaded at peak periods, would be relieved. Regional treatment service would be provided by the Lawton-Verdi Interceptor eventually to Verdi; local treatment plants at Lawton and in the Verdi area would be retired at that time.

If the no project alternative is selected, a total of nine local treatment plants would continue in operation. In the absence of the Cross-Town Sewer, the North Truckee Meadows Interceptor will continue to be subject to overload, with attendant constraints on urbanization in the northwest Reno area, as well as in downtown Reno.

Public Services

Secondary facilitated urbanization will have a significant impact on public services such as public safety, emergency services, general government and education. Although the aggregate impact is significant, the development will occur over a twenty-five year time span and the agencies involved can anticipate the increased service demands in their advanced planning efforts. The economic burden for development of these services will be shared by existing as well as future residents.

Water Supply

Domestic water use is currently on the order of 356 gallons per person per day. This compares with uses in other equivalent cities or between 150 and 200 gallons per person per day (90 to 110 percent greater). This is believed to be related to the use of a flat-rate charge. Currently 17,000 acre-feet, and up to 37,000 acre-feet by the year 2000, of the water used in the service area does not find its way back to the Truckee River. Some of this loss may be reduced by improved water use practices resulting in more favorable return flows to the river.

The Sierra Pacific Power Company (SPPC) which has responsibility for domestic water service in most of the Regional Sewer Service Area, has made its own forecast of water demand in its service area. The SPPC has taken into account available surface water rights and other factors, and the estimate is that up to 330,000 persons within the SPPC water service area could be accommodated utilizing existing water rights under current per capita use rates. As mentioned previously, Truckee River water rights are currently the subject of pending litigation.

Energy Demand

Urbanization will place greater demands on the energy supply system. The local power company (SPPC) has forecasted that by the year 1985 the demand for electricity and gas will more then double. Since electricity energy demands for Nevada are met chiefly by fossil fuels, this increase represents a significant adverse impact. SPPC planning includes provision for this expected demand.

- Economics and Employment

Forecast of employment distribution continues the trend evident over the past thirty-five years - reduced influence of agriculture and mining and a continued increase in the trade, transportation, service and government sectors. Total employment is forecasted to increase from the current 78,000 to approximately 115,000. Total earnings in Washoe County is expected to increase from half a billion dollars in 1970 to approximately two billion dollars by the year 2000.

If the no project alternative is selected, population growth and urbanization may slow to a fraction of that forecasted unless heavy use is made of septic tanks and the local treatment plant. If there is no population increase, growth is unlikely in the economic sector and a decline in economic activity in Washoe County is a distinct possibility.

- Flora and Fauna

Increased urbanization will place greater pressure on the plant communities and associated wildlife in the regional study area. The impact on flora and fauna in the portions of the study area available for development will be relatively minor because of most of this land is already subject to some urban pressures and agricultural activity and the kind of flora and fauna displaced is not normally rare or endangered. The subtle impact of urbanization on the more remote regions of the county which may affect more significant species of flora and fauna results from increased numbers of hikers, recreation area users, off-road vehicle users and the like. This is a long term cumulative adverse impact.

- Air Quality

Projected population growth and urbanization within the service area accommodated by the proposed expansion of the regional wastewater treatment facilities will be accompanied by continued violations of the NAAQS for photochemical oxidants, and particulate matter through 2000 and future violation of the NAAQS for nitrogen dioxide by the year 2000.

Suspended Particulates

Urban areas in Reno and Sparks have experienced high levels of particulates in 1975 which represents violations of National Ambient Air Quality Standards (NAAQS). The region has been designated an Air Quality Maintenance Area (AQMA) for particulates and EPA has initiated studies to determine the causes and provide mitigative strategies. The sources of emissions for particulates are from both natural events (wind, etc.) and man's activities.

Projections show that travel along unpaved roads will continue to be the largest single man-made contribution to particulate emissions. In general, gross annual particulate emissions will increase slightly in the future to the year 2000. Without mitigative measures, violations will continue.

Photochemical Oxidants

Oxidant concentrations are dependent on atmospheric chemical transformations including hydrocarbons, oxides of nitrogen, and oxygen in the presence of sunlight. Emissions of hydrocarbons in the Reno-Sparks area are produced primarily by gasoline-burning automobiles and secondarily by gasoline storage and handling facilities and open burning.

Projections indicate hydrocarbon emissions from all sources will be reduced by almost 50 percent by 1990.

Although vehicular traffic will be increased by population growth, the effects of increased travel will be offset by stringent auto emission control devices. Emissions from open burning are projected to increase, whereas emissions from gasoline storage and handling facilities will remain constant. Despite the projected overall reduction in hydrocarbon emissions, violations of the oxidant standards up to twice the allowable maximum are projected through 1995 in the absence of mitigative measures.

Nitrogen Oxides

Emissions of nitrogen oxides, primarily from diesel and gasoline powered vehicles, are expected to increase as much as 50 percent by the year 2000 over 1973 levels primarily due to increase in transportation-related sources. Violations of the federal standard for nitrogen dioxide may be expected by the year 2000 without mitigative measures.

Carbon Monoxide

Attainment of NAAQS for carbon monoxide is projected by 1981 for the Truckee Meadows area. It appears that the effects of increased population will be compensated for by increased use of late model cars with efficient pollution control devices so that maintenance of standards will continue after 1981 through the year 2000.

If the existing population level is maintained under a no project alternative, the suspended particulate level should remain relatively stable in the absence of mitigation. Carbon monoxide concentrations should be approximately 50 percent and nitrogen oxides, about 60 percent, less than the levels associated with the population forecasts for the year 2000.

Site Environs Impacts of the Treatment Plant Expansion

- Topography

Expansion of the plant under two of the four alternative concepts will have little topographic impact. Two of the concepts (I and III) involve piping sludge and phosphorus-rich supernatant to Spanish Springs Valley for use in an irrigation project and involve creating holding ponds and minor surface earthwork.

- Scenic and Aesthetic Characteristics

Expansion of the treatment plant will maintain the land use and visual impact similar to those which currently exist. The major aesthetic impact would occur in Spanish Springs Valley where, in two of the alternatives (Concepts I and III), an area of about 1550 acres will be converted from range land to irrigated cropland. This land use, however, is compatible with the surrounding uses and is not considered a serious detrimental impact.

- Archaeology

The treatment plant itself is located on a pad cut into a hill; expansion of the plant under any of the four alternative concepts would not involve risk to any archaeologic resources. However, the Spanish Springs irrigation site under Concepts I and III does involve potential risk to some archaeologic resources. The irrigation site is proposed in or near Section 36, T21N, R203, which contains 37 archaeologic sites, some of which are significant. A total of 30 secondary sites were discover d along the proposed pipeline route. The impact on these resources can be avoided if the pipe alignment is kept to the easterly side of Spanish Springs Road. The impact of irrigation activities on the archaeologic finds should be assessed further by an archaeologist. It may be that surface disturbance associated with the agricultural activity would not have any significant effects.

- Soils, Geology and Seismicity

Construction of the plant and collected systems will have no major impacts on these resources. A major impact would occur if a seismic event were to cause damage to the plant itself or to one of the interceptor sewer pipelines or transmission lines (Concepts I and III). In such cases, repairs would be made and the problem mitigated as part of the standard operating maintenance procedures. There is the potential for erosion, particularly in the river bank area, during construction.

- Climate and Air Quality

During construction there will be an increase in suspended particulates and other emissions from construction equipment. These are considered to be minor impacts. Concepts II and IV could involve incineration of dewatered sludge, with adding an estimated 72 lb/day to 5,300 lb/day to the current level of suspended particulates to the AQMA, and this potential impact may be significant.

- Acoustics

During construction there will be an increase in noise level from about 79 dBA to about 105 dBA 50 feet from the noise source. This is not considered a serious impact due to its temporary nature.

- Urban Systems and Energy Use

During construction there will be some minor increase in construction-related traffic activity but no interruption in traffic flow. At full operation, Concept II has the potential for requiring the greatest energy of any of the four alternates. Concept I has the lowest range of energy requirements, while Concepts III and IV are about equal in energy demand. However, in general the increased primary energy requirements of the expanded treatment plant are a minor part of the future energy demands of the regional study area. Concepts II and IV have the greatest demand for chemical use as a result of treatment processes employed in them.

- Economics and Employment

Capital and Operating Costs

The capital costs of implementing the JWPCP expansion range from $12.0 to $29.7 million (1975 dollars), depending on the specific alternate. The annual operating and maintenance (O&M) costs range from $0.8 to $5.6 million. The comparative present worth ranges from $24.5 to $76.9 million.

Generally, Concepts I and III, involving transport and irrigation of sludge, have lower annual costs but have higher capital costs because they involve construction of over 10 miles of tandem pipeline and ponds and dikes in Spanish Springs Valley and purchase of an irrigation area, pumps and sprinkler systems which Concepts II and IV do not have. Concept I has the lowest O&M range of the concepts because it involves the smallest quantity of chemicals and energy input and has a comparatively low labor requirement.

Local funding for the Reno share of the facility expansion is expected to be derived from issuance of general obligation bonds for a 20 year term.

Debt servicing will require additional revenues of approximately half a million dollars annually beginning one year after the bonds are issued. The probable source of these funds is an increase in either or both the sewer service charge or the sewer connection fee.

Local funding for Sparks will also be derived either from accumulated capital reserves or from the issuance of 20 year bonds which will be repaid from sewer service charges and sewer connection fees. Increases in O&M costs are estimated to be funded by increase in total sewer services fee revenues derived from population increases. Debt servicing, amounting to approximately one hundred thirty thousand dollars annually, beginning one year after the bonds are issued, will be funded from sewer service charges and sewer connection fees, either or both of which may have to be increased.

Employment

The estimated total employment requirement is 26 to 36 people including 23 current employees, for 40 MGD treatment. Generally, Concepts I and III (sludge transport and irrigation) involve fewer people than Concepts II and IV which require more labor to accomplish disposal of sludge.

Man years of construction employment is estimated between 216 and 535, varying directly with the capital costs.

The no project alternative involves no new capital costs. Currently the plant has operating and maintenance costs of $0.6 million annually. Present worth of the plant is estimated at $6.7 million. This alternative involves no bond financing or impact on sewer service charge or connection fees. It should be noted that annual costs may increase in the future from inflationary pressures, necessitating increases in service charges and fees, unrelated to expansion. Even if the no project alternative is selected, phosphorus removal will be mandated in the near future to comply with the NPDES permit. Therefore, to view the no project alternative in true perspective, the capital and O&M costs for phosphorus removal are as follows: capital costs = $3.3 million; O&M = $0.2 million (or a total of 0.8 million when added to the current O&M).

Lower Truckee River, Pyramid Lake Basin and Spanish Springs Impacts

- Surface Water Hydrology

The potential hydrologic impacts may be divided into two categories. The first category involves the Truckee River total water volume budget which primarily affects water levels in Pyramid Lake. In this regard the impacts of consumptive use (37,000 acre-ft/yr) of water associated with development of Reno-Sparks to the year 2000 is minor when compared to the total flow into Truckee Meadows of 547,000 acre-ft/yr, or to the Derby Dam diversion (250,000 acre-ft/yr) to meet demands in the Carson River Valley. Total consumption will decrease by 6000 acre-ft/yr, due to presently irrigated agricultural lands being urbanized.

The second category involves the actual river level and/or instantaneous flow rate. Both agricultural and domestic consumptive uses of water reach a maximum in the summer months which coincides with natural low-flow periods. Conversion of existing agricultural water rights to domestic use will change the return water to the river from non-point agricultural flows to discharges of treated wastewater and urban runoff as a trade-off.

- Surface Water Quality

Expansion of the treatment plant under any of the four alternate concepts results in a significant reduction in phosphate loading but an increase in the mass discharge of other parameters, including BOD, TDS, and nitrate.

All four concepts however will occasionally involve violations of phosphate effluent standards, and increases in ammonia and chlorine loadings, in particular, will approach levels identified as toxic in certain fish species. It is recommended that dechlorination (or alternative method) be part of the wastewater treatment process. It is probable that baseline and monitoring studies will show that ammonia concentrations in the Truckee River are and will continue to be at levels toxic to aquatic organisms; therefore, ammonia removal will probably be necessary in the future as part of the treatment process.

Installation of the proposed diffuser system to discharge effluent into the Truckee River is recommended not to exceed 25 percent of the cross-sectional width of the river at the point of discharge in order not to create a chemical barrier to migrating fish species. As an alternate, flows could continue to be discharged into Steamboat Creek.

The impact of selecting the no project alternative depends upon the population to be accommodated. If phosphate removal is initiated without population growth, there will be about a 40 percent reduction in phosphates and the other parameters will remain at existing levels. If population increase does occur under the no project concept with phosphate removal only, then the other parameters will be adversely affected.

- Flora and Fauna

The increased loading of chlorine and ammonia will probably affect such species as the threatened Lahontan cutthroat trout.

There will be a minor short term impact on the Truckee River caused by construction of the transmission lines to the irrigation disposal site across the river under Concepts I and III. Increased sedimentation loads and suspended particulates can be harmful, particularly during the period when trout eggs could be destroyed by smothering. This impact can be mitigated by closely controlling construction scheduling to avoid this period of time.

Heavy irrigation and leaching of supernatant in Concepts I and III may change the groundwater table close to the irrigation site. This may have an effect on plant communities in the vicinity and could result in changing the natural successional trends of these plants. In addition, the recharged aquifers will supply phreatophytes with additional groundwater. A change in groundwater quality near the Spanish Springs site also has the potential for altering the natural vegetation in the vicinity if nutrients or heavy metals regimes change significantly.

The impact of the no project alternative will vary in proportion to the population which occurs. If phosphate removal, only, is implemented and no growth occurs, phosphate levels will be reduced and other parameter levels will remain approximately at current levels. If significant population growth does occur and the hydraulic capacity is not improved, serious consequences to downstream aquatic fauna will occur. Significant increases in BOD would result in distinct DO sags downstream to Derby Dam. Phosphate levels would increase significantly and contribute to gradually increasing algal activity downstream, which could produce extreme consumptive demands on the DO tension. This, in combination with higher ammonia levels, could combine to produce fish kills. Water quality trends would threaten the existence of the lower Truckee and Pyramid Lake fishery and further reduce aquatic faunal diversity. In addition, suspended soils would increase significantly above present levels causing potential suffocation of benthic communities and suffocation of fish eggs and spawning beds downstream of the plant outfall.

- Recreation

The impact of the project on downstream recreation is proportional to the effluent quality and the impact on sports fishery and water quality in terms of contact and boating sports. If the project is implemented these conditions will be much improved over the no project alternative.

- Groundwater Hydrology and Quality

The major impacts of the treatment plant on groundwater hydrology are associated with export of sludge, phosphorus-rich supernatant or effluent as supplemental irrigation waters to Spanish Springs Valley proposed in Concepts I and III. The major impact is associated with the fact that the quantity of nutrients proposed in the Facilities Plan to be transported to the irrigation site exceeds the estimated capacity of crops to utilize the nutrients.

The principal concern is the nitrate loading which would occur as a result of irrigation in the Spanish Springs Valley. Groundwater which comes into contact with the percolated flow would contain high levels of nitrogen and would probably be rendered unfit for human consumption. In addition, concentrations of certain metals added to the soils could be relatively high.

Cross-Town Sewer Extension Corridor Impacts

- Topography

  The Cross-Town Sewer under either alternate alignment will be constructed primarily in existing streets and will have no long term topographic impacts.

- Scenic and Aesthetic Characteristics

  Scenic and aesthetic impacts are limited to the short term impacts of construction and are similar under either alternate.

  There will be minor inconveniences to residents and commercial establishments and some minor traffic disruptions from the presence of equipment and building materials during construction.

- Recreation

  The project will cause some disruption to downtown Reno with some effect on the tourist recreation industry in either alternate alignment. This disruption will be minor and short term, caused by minor traffic flow disruption and the sight of equipment and building material. One of the routes (AB-R) passes through Wingfield Park, an island in the Truckee River. The impacts on this park would be limited to short term construction activity such as noise, dust and trenching. This route will also parallel a linear park extending from Arlington Avenue to Washington Street on the north side of the Truckee River on Riverside Drive. Although the line would not necessarily pass through the park it would be impacted by adjacent construction activity.

- Archaeology

  It does not appear that the project poses a threat to archaeologic resources under either alignment.

- Soils, Geology and Seismicity

  The project has no effect on these factors under either alignment. The major impact would occur if a seismic event were to cause damage to the line. In such a case, repairs would be made and the problem mitigated as part of the standard operating procedure.

- Hydrology and Water Quality

  The major water quality impact of the Cross-Town Sewer will occur during construction in the segment which crosses the Truckee River near Arlington Avenue, causing the potential for short term siltation and suspended particulates. Alternate AB will create less disturbance to the river bottom than Alternate CD as a result of its alignment. This short term impact can be mitigated by strict construction scheduling to avoid the trout spawning season. The long term water quality impacts of the Cross-Town Sewer are beneficial in that it will eliminate the possibility of surface discharge from overloaded sewer mains from the North Truckee Meadows Interceptor, which would flow to the groundwater and the Truckee River.

  The no project alternative has secondary groundwater quality implications particularly in the upstream Lawton-Verdi area where the potential for leaching of material from septic tanks poses the threat of contaminating the Truckee River which supplies most of the water for the Truckee Meadows area.

  Thus, the Cross-Town Sewer forms an important link in the overall Sewer Master Plan for the Truckee Meadows area.

- Flora and Fauna

  Impacts to flora and fauna are minor. However, because the line crosses the Truckee River near Arlington Avenue it will cause a temporary disturbance and potential for increasing sedimentation and turbidity during construction. Alternate AB will create less temporary impact than Alternate CD.

- Climate and Air Quality

  There is no long term impact of the project on these factors. However, during construction the equipment will emit a small quantity of pollutants and cause some increase in suspended particulates with the trenching and other construction activities.

- Acoustics

  There is no long term impact on acoustics associated with the project. During construction, there will be a temporary increase in noise in the vicinity of the construction activity.

- Land Use

  No homes, businesses or land designated for residential use will be affected over the long term by the Cross-Town Sewer under either alignment.

  The Cross-Town Sewer will relieve the presently overloaded North Truckee Meadows Interceptor, which provides service to downtown Reno and to southwest, northwest and west Reno. Although northwest and west Reno are within the water service area of the SPPC, the existing deficient sewage system is effectively preventing urban growth. The project would relieve this condition and facilitate growth in these areas.

  If the no project alternative is selected for the Cross-Town Sewer, the negative impacts, most of which are temporary in nature, would be avoided. However, some serious long term impacts would be created. The primary impact of the no project alternative is that the currently overloaded North Truckee Meadows Interceptor would not be relieved. This has consequences for development in the northwest and west Reno area and by reason of not diverting flows also would restrict further development of the downtown area. The no project alternative would result in growth moratoria in these areas and development would probably be shifted to the eastern and southern parts of the city.

  The no project alternative has additional consequences for development in the Lawton area west to Verdi because the Cross-Town Sewer would be the hook-up point for the Lawton-Verdi Interceptor.

- Urban Systems

  Construction of the Cross-Town Sewer will be somewhat complicated by in-place facilities, such as other sanitary sewers, storm drains, water, gas and telephone in either alignment. However normal construction practice should avoid disrupting these facilities.

Either alignment will have an impact on traffic during construction. Trenching activity in the street will require a minimum of 20 foot width for stockpiling of dirt, equipment and so on. The major impacts for both alignments will be on Mill Street and one block of Virginia Street both of which have heavy traffic volume. Traffic will have to be rerouted on a temporary basis around the construction area.

- Economics and Employment

The cost of the Cross-Town Sewer is estimated to range between $1.66 and $1.97 million. The annual costs are estimated to be between $161,000 and $190,000. Construction employment is estimated to require between 30 and 35 man years of effort. The differences between the alternate alignments is negligible.

As with the wastewater treatment plant expansion, the local share cost of the project (25 percent) would be funded by the issuance of a general obligation bond with a 20 year maturity, the servicing of which will probably require an increase in sewer service and connection fees.

Lawton-Verdi Interceptor Corridor Impacts

- Topography

Topograhic impacts for both the railroad and river routes are minor and limited to construction access roadways, very minor permanent micro alteration in the river channel and possibly the employment of rip-rap and other erosion prevention measures.

- Scenic and Aesthetic Characteristics

The railroad route involves trestle placement, sewage lift stations, pipe hangers, cutting of benches and employment of rip-rap and other erosion prevention measures. However, much of this activity occurs in the current railroad corridor where a similar man-made facility already has set a visual pattern. The river route requires possibly up to 150 raised manholes in the vicinity of the river and involves a great many more river crossings, causing temporary impact during construction. Therefore this route probably has the greatest adverse aesthetic impact.

- Archaeological Resources

  The railroad alignment does not contain any known archaeological resources. However, the river alignment passes through three major sites which may be disturbed. Detailed archaeological reconnaissance at the time a final alignment is selected should be conducted to determine precise impact and available mitigative measures.

- Hydrology and Water Quality

  The railroad alignment has little effect on water quality other than at a limited number of secondary stream crossings. The river alignment involves numerous primary river crossings and will cause significant temporary siltation as a result.

- Flora and Fauna

  Increased sediment load in the river would result in downstream turbidity and siltation from the river crossings which would blanket benthic communities in the stream. This impact is much more severe under the river alignment than the railroad alternate. If construction occurs during the spawning runs of the Lahontan cutthroat trout or during the early life history of the fry, the increased turbidity and sedimentation could adversely affect this threatened species.

- Air Quality

  The project will involve only minor short term air quality impacts associated with emissions and suspended particulates, created by construction vehicles and activity.

- Acoustics

  There will be a temporary increase in the noise level in the area of construction activity. However, these noise impacts are short term.

- Urban Systems

  The project does not pose a significant impact to any urban system. There will be short term disruption to traffic and the potential for interruption in other urban facilities, such as gas, electricity, water, and the like. Any such interruption would be very short in duration.

- Land Use

Implementation of the railroad route alternative will have little direct land use impact. The river route would probably require permanent access right of ways.

- Economics and Employment

The river route, Alternate 1, is estimated to involve capital costs of $9.5 million at 1975 prices. The total annual cost, including debt servicing and present worth of operation and maintenance is estimated to be $926,000 on a 20 year amortization basis and $742,000 on 40 year amortization (S-1). This alternate is more expensive to build than the railroad route, primarily because it requires 11,600 linear feet more pipe (caused by river meander); involves twelve primary river crossings, all requiring water-tight pipes and manholes; requires construction of heavy equipment access roads; and involves extensive revegetation and relandscaping in the vicinity of river crossings and access roads. Construction employment is estimated at 171 man years.

The river route involves somewhat lower yearly costs on a 40 year basis than the railroad route, primarily because there are no lift stations to service some low lying tributary areas requiring fuel and maintenance. This alternative will involve impacts on sewer service charges and connection fees amounting to about one half of one percent less than the railroad alternate, a very slight difference.

As with the Cross-Town Sewer, funding for the Lawton-Verdi Interceptor is expected to be derived from federal sources, according to the provisions of PL 92-500, amounting to 75 percent of the total capital costs. Local sources will provide the remainder in the manner previously discussed in relation to the wastewater treatment plant expansion.

The railroad route, Alternate 2, is estimated to cost $8.9 million. Total annual costs, including debt servicing and present worth of operation and maintenance, is estimated to be $921,750 on a 20 year amortization basis and $964,000 for a 40 year amortization. The railroad route will involve some difficult construction techniques, including railroad jacking, tunneling, 3,900 feet of tressels, pipe hangers, extensive trench shoring and dewatering, and construction of lift stations. Construction employment is estimated at 160 man years.

Funding sources for this alternative are identical to those for the river route. Local revenue sources are also the same. The railroad alignment, because it requires lift stations, has a higher annual cost, amounting to about 2 percent more per year than the river alternate and will correspondingly have a very slightly greater effect on sewer service charges and fees (25 percent of 2 percent or about one half of 1 percent).

DISCUSSION AND EVALUATION OF ALTERNATIVE DESIGN CAPACITIES

The development of the design population for the JWPCP has been previously discussed and is accepted as a given factor in the formulation of alternative design capacities. The design capacity of the JWPCP should reflect the existing flows currently treated (21 MGD), dwellings within service area currently utilizing small local treatment plants and septic tanks (3 MGD) and future development. Alternative design capacities must not only accommodate known flow conditions but also must recognize the engineering constraints incorporated into the design of the existing facilities. That is, capacity expansion alternatives are limited to 30, 33.3 and 40 MGD. Thus, the capacity needed to serve the design population may be constructed all at once or in stages. The following alternative design capacities with the year of expected completion, are set forth for public review and discussion.

Alternative 3H:	40 MGD (1980)
Alternative 3H1:	30 MGD (1980), 40 MGD (1987)
Alternative 3H2:	33.3 MGD (1980), 40 MGD (1991)

If the present per capita contribution of 135 gallons per person per day remains unchanged, flows are projected to reach 30 MGD in 1987 and 33.3 MGD in 1991.

In order to compare the costs of staged expansion with construction of a full expansion, the capital and operating costs for each of the above alternatives over the 20 year planning period have been calculated using 1975 costs and are set forth in total present worth dollars as follows:

Alternative 3H: $32,886,000; Alternative 3H1: $31,999,000; Alternative 3H2: $31,616,000. Within the range of estimating accuracy the cost-effectiveness of the alternatives may be judged to be equal.

Another factor affecting the determination of design capacity to be considered includes the fact that, because of inherent design considerations, phased systems would be somewhat more complicated to operate and control.

Currently the per capita average annual contribution to the sewerage system is 135 gallons per day. The benefits of and potential for reducing this parameter are sufficient to merit considerable attention. The benefits of such a reduction include improved treatment efficiency resulting in lower power and chemical requirements, lower operation and maintenance costs and increased design life of existing sewers. Because less water would need to be withdrawn from the Truckee River, the assimilative capacity of the river would be increased and river temperature may be decreased.

Although the most feasible measures for reducing per capita discharges are not known, they might include water supply metering, water supply charges based on water use and use of water conserving devices in new home construction. Implementation of such a program could take a number of years and could be accomplished while first stage plant construction is undertaken.

POSSIBLE MITIGATIVE MEASURES

In this section potential mitigative measures are presented for consideration by agencies responsible for implementation, the public, and reviewing agencies. While NEPA requires EPA to determine and discuss all impacts of alternative projects, EPA may only require as a condition of project approval, mitigation of those primary and secondary impacts which contravene a federal law, regulation or executive order. Other impacts and potential mitigative measures are recommended as to the local decision makers for their consideration. It is expected that, after review of these and other equally effective measures and after reviewing comments from the public and reviewing agencies, the City of Reno will contact agencies capable of implementing viable measures and solicit commitments for implementing specific measures. Primary impact mitigative measures will be incorporated into the construction plans and specifications and O&M Manual and secondary impact mitigative measures necessary to preclude violations of federal laws. Regulations, guidelines, or executive orders will be submitted to EPA in the form of adopted resolutions or ordinances. EPA will then make a judgment as to the significance of the remaining primary and secondary unmitigated impacts.

Primary Project Mitigative Measures

- Topography

  Construction corridors should, where applicable, be graded to original contours.

- Scenic/Aesthetic Characteristics

  Landscaping should be provided and maintained at the treatment plant site to be compatible with or enhance the surroundings.

  Removal of natural vegetation should be minimized.

  Storage and disposal facilities at Spanish Springs Valley should be developed to be compatible with or enhance the surroundings.

  Excavation and placement of pipes should be a rapid process in order to minimize the number of days that views are impaired. Care should be taken to provide early site restoration including vegetation, where required, following pipeline placement.

During construction and on-going maintenance, general clean up of trash and construction debris should be routine, with disposal in approved areas. Controls to reduce degradation of existing natural qualities of the site should receive a high priority.

Storage of construction equipment and materials should be limited to designated areas.

Uses of construction vehicles should be limited to assigned rights-of-way and haul roads.

Structures should be architecturally designed and landscaped so as to be compatible with their surroundings.

- Archaeology

Archaeological sites have been identified at the land disposal site in Spanish Springs Valley and along the west side of Spanish Springs Road. It is recommended, therefore, that a detailed archaeological survey be conducted of the proposed land disposal site in Spanish Springs Valley to determine the extent of necessary mitigative measures on these sites. The sludge and supernatant pipeline to Spanish Springs Valley should be located in the public right-of-way on the east side of the Spanish Springs Road, in which case no additional survey of this route would be required. If a route other than this is chosen as the pipeline route, then an archaeological survey should be conducted to properly choose the best location for the pipeline route.

A person qualified to recognize cultural resources should be present during all ground disturbance operations with the authority to stop construction and determine the significance of any finds that may be encountered and recommend appropriate mitigative measures to the National Park Service, the Nevada Historic Preservation Officer and the Advisory Council on Historic Preservation.

Construction contracts should specify that any uncovering of significant archaeological sites be reported immediately and that work be halted to determine the proper cause of action.

The value of the site should be determined in coordination with the National Park Service, the Nevada Historic Preservation Officer and Advisory Council on Historic Preservation prior to excavation of the resources to determine proper recovery or avoidance procedures.

Delays and costs attributable to necessary alignment changes and proper recovery of cultural resources should be addressed by change order procedures without time or cost penalty to the construction contractor.

Construction personnel should be encouraged to report possible cultural resource findings and should be instructed as to the nature and identifying characteristics of the resources that might be encountered.

- Resources

There is a potential to reuse sludge digester gas to produce power for treatment system needs.

Development and implementation of a water conservation program designed to reduce the quantity of water discharged to the sewer system such that plant efficiency might be improved and power and chemical requirements might be reduced would mitigate the anticipated impacts on water quantity and quality.

- Soils and Geology

Implementation of the following measures will mitigate the potential adverse geologic and seismic impacts reported in Chapter 6, which affect the treatment plant expansion, sludge and supernatant transmission pipelines and the interceptor sewer lines.

1) Install the sewer lines with reasonable setback distances from the top of hills and banks

2) Design the sewer line and its appurtenances with reinforcement as necessary to resist earthquake forces

3) Provide periodic maintenance, surveillance, and quality control during construction as well as during normal systems operation

4) Proper monitoring could identify pipe settlement and allow for correction prior to any breakage. Frequent installation of valve structures along

the transmission line would provide emergency shutoff locations

5) Design slopes properly to avoid possible landslides at the treatment plant site

6) Minimize effects of expansive soil conditions by placing a thicker than normal bed of ground below the pipe or by installing the pipeline at greater than minimum depth requirements

7) Avoid exposure of all sewer lines under the river due to scour by requiring, in the pipe design, adequate cover below the river bed

8) Prevent damage to the interceptor sewer from landslides in the Lawton-Verdi area by conducting proper route selection surveys; in this way, unstable areas with potentially unstable material will be avoided

Alarm system should be installed in force mains to signal pressure drops during pumping to warn of broken or leaking pipes, such as could result during earthquakes or from subsidence.

- Surface and Groundwater Hydrology

Mitigative measures to prevent or retard environmental impacts on surface and groundwater include:

1) Prevent entry into surface waters of wash from equipment and waste materials such as petroleum products by designation of service areas and provision of waste containers.

2) Implement erosion control measures, where necessary, during plant construction and Spanish Springs sludge pipeline and disposal facilities construction and operation.

3) Installation of the proposed diffuser system to discharge the effluent into the Truckee River is recommended not to exceed 25 percent of the cross-sectional width of the river at the point of discharge in order not to create a chemical barrier to migrating fish species. Alternatively, flows could continue to be discharged into Steamboat Creek.

4) Construction of chlorine removal facilities or alternative disinfection facilities to reduce effluent toxicity to aquatic life.

5) Development and enforcement of a sewer use ordinance such that the discharge into the collection system of materials that are not susceptible to wastewater treatment would be prohibited or reduced to acceptable levels.

6) Restrict stream bottom substrate disturbance at points of river crossing to a minimum width. Avoid stream-crossing construction during period of extreme low flow to prevent damage to young trout and trout spawning activities that could be caused from construction sediment loading.

7) Develop and implement water quality monitoring programs for the Truckee River, and the Spanish Springs disposal area (should Concept I or III be selected) sufficient to determine the need for ammonia and/or nitrogen removal and the safe levels of sludge and supernatant application.

8) Proper design of supernatant and sludge pipelines such that exfiltration is kept to a minimum. Measures to reduce chlorine compounds and un-ionized ammonia to minimize effluent toxicity to aquatic life may be necessary to comply with discharge limitations that may be set forth in future NPDES permits.

- Vegetation

Impacts to vegetation communities in construction areas can be mitigated if the following measures are implemented:

1) Avoid river bank disturbance where possible, and re-vegetate or stabilize construction areas on disturbed river banks.

2) Revegetation should be accomplished with species common to the area wherever possible.

3) Top soil should be stockpiled and replaced following grading operations in cultivated and/or agricultural areas to facilitate revegetation.

- Fish and Wildlife

See Surface and Groundwater Quality for associated mitigative measures.

- Air Quality

  Air quality impacts related to dust generated during or after construction activities can be mitigated by (a) keeping the construction site watered; (b) operating dirt haulage equipment at low speeds; (c) limiting grading operations on extremely windy days; (d) revegetation.

  Internal combustion engines, both mobile and stationary, used at the construction sites should be provided with emission control devices. Internal combustion engines should be maintained in a well-tuned condition.

  All volatile liquids including fuels and solvents should be stored in closed containers. These liquids should be transferred by hoses provided with the air-tight connectors.

  Open burning of construction scrap and vegetation should be prohibited.

  Sewer collection line odors, if a problem, should be eliminated by reducing sewage travel time or adding odor retarding measures.

  If sludge incineration is chosen it should be designated and operated to comply with the New Source Performance Standards of the Washoe County District Health Department.

- Acoustic Environment

  Maintain effective noise reduction devices on all construction equipment to limit noise to less than 86 dBA level at 100 feet in noise sensitive areas.

  Residents living in areas adjoining the site should be notified on what dates construction will occur in their area, so that they can plan their activities accordingly.

- Land Use and Population

  Local ordinances together with OSHA and Nevada Industrial Commission Regulations shall be enforced to protect workmen and the general public.

  The selected site should have adequate size to permit a buffer zone to exist between the operation area and adjacent lands.

- Urban Systems

  Transportation

  To minimize traffic disruption caused by interceptor construction occurring within a traffic lane or crossing a street, proper traffic control procedures should be practiced particularly on Mill Street and one block of Virginia Street. At least one lane in each direction should be maintained if at all possible. Construction sites should be clearly marked. Motorists should be given early warning of upcoming construction activity so that alternate routes may be taken or vehicle speed appropriately adjusted. Where necessary clearly marked detour routes should be provided. Authorities responsible for emergency vehicle movement should be notified prior to closing a street or establishing a detour.

  Disruption of gas, telephone or electrical service due to construction should be as brief as possible. The service area should be notified if the disruption will be of any duration.

- Economy

  Where construction in streets adjacent to businesses is required, temporary access for foot traffic should be provided and early advice of such activity should be provided so appropriate plans may be made.

Secondary Impact Mitigative Measures

- Resources

  Encourage energy conservation through public education.

  Class I and II soils in rural areas should be preserved where possible for agricultural uses.

  Protect areas potentially needed for future park development from encroaching urban development.

  Energy conservation should be practical through improved machine efficiencies and adherence to recognized insulation construction standards.

- Archaeology

  The Cities of Reno and Sparks and Washoe County could each survey their portions of the proposed service area to determine the location of archaeological, historical, and paleontological sites.

  The City of Sparks and Washoe County could each require proposed developers to submit an archaeolgoical survey for the proposed site.

  Upon identification of a site in an area proposed for development with potential adverse impact, the land use agencies could require development to submittal of measures to mitigate the adverse effects.

  To avoid possible vandalism or destruction of known sites the exact location of these sites should not be made public.

- Geologic Hazards

  Use of zoning to limit and/or manage development in areas subject to hazards from flooding, seismic events and landslides.

  Following determination of flood hazard zones in accordance with the Flood Disaster Act of 1974, participation in the HUD Floodplain Management Planning Program.

- Water Service, Demand and Conservation

  Water Use: Public education to explain water conservation methods and benefits.

  Encourage the use of water conservation devices for showers and toilets in existing homes.

  Incorporation of water conservation devices (showers, toilets, dish washers) in new construction standards.

  If water meters were to be permitted under state law, then water pricing could be made proportional to water use.

  Encourage the use of vegetation which uses less than average amounts of irrigation water.

- Water Quality

  Incorporation of erosion control measures into building permits.

  Use of zoning to limit and manage development areas particularly susceptible to erosion, such as along the river and stream margins, on slopes greater than 15 percent and in inaccessible fire-prone areas.

  Incorporation of urban runoff controls into land use plans and construction criteria, such as storm flow detention basins, management of large animal wastes, and litter control ordinances.

- Air Quality

  Secondary impacts on air quality are associated with population growth. These impacts can be mitigated by implementing the following measures:

  Encouraging mass transit system on an intra-city and inter-city basis to reduce vehicle use (oxidants, carbon monoxide [CO]).

  Encourage elimination of barriers to constant speed traffic (oxidants, CO).

  Frequent, regularly scheduled street cleaning, using mobile vacuum cleaning equipment (particulate matter).

  Paving or chemically stabilizing unpaved roads (particulate matter).

  Reduced speed limits on unpaved roads (particulate matter).

  Encourage priority parking and/or reduced rates for car pool vehicles (oxidants, CO).

  Encourage use of bicycles and construct bicycle paths and storage facilities if need requires (oxidants, CO).

  Development of a state vehicle inspection program with mandatory maintenance/repair for those vehicles failing the inspection (oxidants, CO).

Facilitate mass transit by cluster development, and in filling of passed areas on a priority basis (oxidants, CO).

Limit off road vehicles on public lands to designated public areas (particulate matter).

The Cities of Reno and Sparks as well as Washoe County will participate in the development and implementation of the State Air Quality Maintenance Plan (particulate matter).

Improve stationary source monitoring and enforcement if necessary (oxidants, CO, particulate matter).

Control of sand and gravel pit aggregate and haul road emissions if necessary (particulate matter).

Substitute free bus tokens in place of parking validations to encourage public transit ridership (oxidants, CO).

Improve traffic flow (synchronized traffic signals, one way streets, etc.) (oxidants, CO).

Install vapor recovery control for underground petroleum storage tanks at individual gasoline stations (oxidants).

- Urban Systems

The WCOG should plan to develop early needs for schools, roads, transit services, solid waste collection and disposal, police and fire protection, water and sewer lines, postal services, health care, recreation, libraries, and government services. These needs should be incorporated into the land use plans so that the rate form and location of development may be consistent with available public funding.

PROBABLE SIGNIFICANT ADVERSE IMPACTS WHICH CANNOT OR ARE NOT CURRENTLY PROPOSED TO BE MITIGATED

This section cannot be completed until a project is selected with appropriate mitigative measures. The Final EIS will, however, discuss these subjects in detail since they will represent a major factor in the decision to fund a selected project.

Adverse impacts differ in their susceptibility to mitigation. Most primary construction and operational impacts can generally be reduced to acceptable levels with the principal determinant being the level of expenditure of public funds. The level of mitigation finally implemented will therefore reflect the value assigned the resources potentially impacted and the relative priority of these resources within the many competing demands on limited public funds. Other primary impacts can be reduced in extent and duration but not entirely avoided.

It should be noted that the full project impact would not necessarily occur the day the facilities became operational. This is particularly true for the secondary impacts associated with population growth. Land use planning, as the chief determinant of the level, location and timing of development, is capable of resolving most secondary impacts; however, there is a danger that infrastructure investments and piecemeal development in advance of completed plans may direct the outcome or foreclose planning options. The absence of completed land use plans, especially in the Lawton-Verdi corridor, capable of addressing the design population to be served by this project complicates any commitment to specific secondary impact mitigative measures since the impacts can only be generally described without knowing the form and location of this development. The mitigation of secondary impacts ia generally more difficult than for primary impacts because it may involve changes in basic public policy and in life styles of residents. Again, the level of mitigation finally implemented will reflect the value assigned the resources being protected and their relative priority among other goals and needs.

Because of these limitations, the avoidable impacts are identified by category only.

Primary impacts that can be sufficiently mitigated to all but a minor degree:

- Groundwater effects from sludge and supernatant application
- Temporary water quality effects of turbidity associated with stream crossings
- Temporary nuisance effects of construction dust and noise
- Water quality effects of erosion
- Odors associated with operation of the JWPCP and sludge disposal operations
- Temporary residential, commercial, traffic and recreational disturbances associated with construction
- Destruction and/or disturbance of vegetation
- Aesthetic disturbance associated with construction
- Disturbance of archaeological sites due to sludge disposal activities

Primary impacts that can be mitigated to all but a moderate degree:

- Land consumption associated with use of 5 acres for the plant site and 1500 acres for the sludge disposal site
- Emissions associated with operation of a sludge incinerator
- Consumption of power, materials, and chemicals associated with construction and operation of the facilities.
- Construction and operation/maintenance costs of the facilities

Secondary impacts that can be mitigated to all but a minor degree:

- Development of hazard areas including floodplains and seismic zones
- Destruction or disturbance of archaeologic sites
- Air quality degradation

- Consumptive use of water from the Truckee River

Secondary impacts that can be mitigated to all but a moderate degree:

- Consumption of natural resources
- Consumption of agricultural and open space lands
- Consumption of wildlife habitat
- Requirement for additional urban services with associated costs

RELATIONSHIP BETWEEN LOCAL SHORT TERM USES VERSUS MAINTENANCE AND ENHANCEMENT OF LONG TERM PRODUCTIVITY OF THE ENVIRONMENT

The proposed project involves the use of resources which, once committed, foreclose the option for other uses; the project will create beneficial and adverse impacts, both long term and short term. The most important of these short term impacts are the potential effects on aquatic biota from siltation, and the potential to damage or destroy archaeological resources, particularly along the Spanish Springs line route. Both of these impacts are sufficiently mitigatable that serious damage can be avoided. The principal beneficial project impacts are improved levels of domestic wastewater treatment and water quality conditions in the Truckee River.

Long term impacts are, for the most part, a tradeoff between direct long term beneficial impacts and secondary adverse impacts. The three projects, on a whole, will improve the sewage collection and treatment system, improve upstream surface and groundwater conditions and will reduce the phosphate levels and eutrophication of the lower Truckee and Pyramid Lake system.

Secondary adverse impacts are all related to an increase in population and urbanization accommodated by the project. Several of the air and water quality parameters will increase as a result of future population levels. Future developments will create new demands for urban systems, including facilities, utilities, services and energy. Urbanization will create pressures on the region's flora, fauna, archaeologic resources, scenic, park and open space system. Debt servicing for the project will probably require an increase in sewer user fees and charges.

The beneficial secondary impacts are the jobs created as a part of future urbanization and the total spendable income generated from this level of employment, as well as accommodating a portion of the growing national population.

The three projects, themselves, represent a permanent commitment of resources of just under $30 million, in addition to about $1 million in annual O&M costs. No other direct commitment of resources is required. However, the facility will permit urbanization of approximately 25 square miles; this secondary effect, which is subject to project-by-project approval by elected officials and staff, will require the commitment of substantial resources in the future.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Construction of sewage treatment and sewage conveyance systems requires the irreversible, irretrievable expenditure or use of energy, material, land and manpower and depreciation of capital goods (equipment). Construction also poses certain risks to the environment and to construction workers and residents, some of which may be irreversible commitments.

Continued operation and maintenance of the sewer system and equipment requires expenditures of energy, materials, manpower and depreciation of capital.

Construction-Related Resource Consumption

Material, energy, labor and right-of-way land resources required for the Joint Water Pollution Control Plant, the Cross-Town Sewer (Mill Street Interceptor Extension) and the Lawton-Verdi Interceptor are represented by the capital costs of their respective alternatives, detailed in Chapters 5 and 6.

Operation-Related Resource Consumption

After construction, further irreversible, irretrievable commitment of resources derives from three sources: 1) operation and maintenance (O&M) of the facilities; 2) the potential for accident or damage to the system; and 3) the indirect commitment of resources which is facilitated by the project.

Urbanization accommodated by the project will require the irreversible, irretrievable commitment of substantial land, material, labor and energy resources and, for continual operation, labor, materials and energy. In the process, vegetation, wildlife, scenic, archaeologic and recreational resources will be irretrievably consumed or lost. Current agricultural production will be irretrievably converted to urban uses. Domestic water will consumed at a greater rate, although it is a recycling resource.

PUBLIC CONCERNS AND UNRESOLVED ISSUES

Throughout preparation of the EIS, the consulting team, the City of Reno and the Environmental Protection Agency have identified certain key issues of concern to the public who have an interest in the Truckee Meadows and surrounding area. These issues were emphasized and clarified in two public information workshops held during preparation of this document at the Reno City Hall, the first in March and the last in October, 1976. These concerns, which are the subject of the EIS, are listed below.

- Compatibility of sewer service extension with articulated general planning goals;
- Rationale for improved regional waste treatment and collection;
- Growth accommodation resulting in air quality degradation;
- Groundwater consequences of sludge supernatent disposal in Spanish Springs Valley;
- Sewer construction impacts within the upper Truckee River Canyon (to Verdi);
- Water quality influences on the riverine fishery;
- Water quality/quantity ramifications of the proposed project on Pyramid Lake and the lower Truckee River
- Water supply/conservation
- Implications of proposed project alternatives for construction employment and the general economy.
- Implications of accommodated population growth and extended urbanization for life style of residents.
- Distribution of and character of urban development in Truckee Meadows and Truckee River Canyon.

A second area of concern is in regard to a number of issues which are not possible at this time to resolve. Some of these are external to the proposed project; others await further study or work by other agencies. In any lengthy detailed study of a large complex system such as the Reno-Sparks Joint Water Pollution Control Plant and associated sewerage system, it is rarely possible to resolve all the issues prior to making major decisions. Future wastewater treatment program planning most likely will benefit from resolution of some of these issues, which are listed below.

- Benefits, necessity, methods and degree of removal of potentially toxic and biostimulatory forms of nitrogen from the Truckee River that are currently present in the Reno-Sparks JWPCP discharge.
- Completion and implementation of the Washoe Council of Governments Areawide Wastewater Management Plan, which will address diffuse source pollution from Steamboat Creek and the North Truckee Meadows Drain.
- Selection of Project: a treatment capacity and a treatment configuration which is cost effective and which minimizes environmental degradation and maximizes environmental enhancement.
- Character, density and distribution of future urban development in Truckee Meadows and particularly in the upper Truckee River Canyon.

LIST OF REFERENCES

S-1 SEA, Inc. Reno Cross-Town Interceptor, October 30, 1975, Reno, early 1976, including Appendices A-E.

W-1 Walters Engineering and Metcalf and Eddy. Unified HUD-EPA Area-wide Water Quality Management Plan for Washoe County, November 1974.